ShiningTree Forest

Independent Forest Audit

April 1, 2001 – March 31, 2006

Final Report

by:

ArborVitae Environmental Services Ltd.

February 20, 2007

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1 EXECUTIVE SUMMARY

ArborVitae Environmental Services Ltd. performed an independent forest audit (IFA) of the management of the ShiningTree Forest for the period April 1, 2001 to March 31, 2006. The audit was undertaken using the Independent Forest Audit Process and Protocol (IFAPP), prepared by the Ministry of Natural Resources (MNR or the Ministry). The audit examined compliance with the Crown Forest Sustainability Act, the terms of relevant licences, especially Sustainable Forest Licence (SFL) 542321, held by ShiningTree Forest Inc. and the management plan in place for the Forest.

The context for this audit was somewhat unusual given that ShiningTree Forest is being amalgamated into the neighbouring Timiskaming Forest. Although an SFL still exists for the ShiningTree Forest, it is anticipated that the revised SFL for the Timiskaming Forest will come into effect on or about April 1, 2007. At that time the SFL for the ShiningTree Forest will be terminated and the ShiningTree Forest will cease to exist as a discrete entity. Adding to the complexity of this audit is the management structure which was in place for the Forest during the audit term. For the first half of the audit term, the Forest was managed by Domtar Inc., under a management contract with ShiningTree Forest Inc. For the latter half of the audit term, Timiskaming Forest Alliance Inc. (TFAI) was the management contractor for the Forest. TFAI holds the SFL for the Timiskaming Forest, and when the Forests are officially merged it will be the SFL holder for the amalgamated Forest which will include the then-former ShiningTree Forest.

The IFA assessed the performance of both Domtar and TFAI (often referred to as the "the Company") in contributing to the management of the Forest. However, given that Domtar no longer has a role in managing the Forest, and that TFAI will continue to manage the amalgamated Timiskaming Forest, the audit considered more heavily those aspects of management which occurred under the guidance of TFAI. This audit also examined the MNR's performance in contributing to the management of the Forest.

The focus of the audit's activities was a site visit to the Forest which included: a review of management documents at the office of TFAI in Englehart and at the MNR's office in Gogama, interviews with staff of the Company, the MNR, shareholders in the Company, and consultations with members of the Local Citizens Committee, the general public, and local First Nations. The site visit also included intensive inspections of field sites where a variety of management activities took place in the review period.

This audit makes 19 recommendations and 3 suggestions (Table 14). The findings are directed approximately equally to the MNR and the Company.

Perhaps the most vexing aspect of this audit has been considering the strained rapport between Company staff and the MNR staff with which they routinely interact regarding the ShiningTree Forest. The widely different perceptions of the quality of some aspects of management of the Forest is difficult to reconcile. Given that MNR staff associated with the ShiningTree Forest will continue to play a role in management of the amalgamated Timiskaming Forest, the Audit Team believes it is very important for this situation to be addressed. The difficulties produced by the impaired rapport are recognized by both the MNR and Company. Although not yet at the stage where it is strongly affecting forest management in a detrimental manner, the likelihood that this

may occur is a concern. The energies consumed by dealing with the poor relationship would undoubtedly be better spent in more productive aspects of managing the forest.

On a more positive note, this audit found that management of the Forest for the period reviewed was sustainable. The Audit Team was impressed with the level of TFAI staff commitment and the staff's desire to develop innovative approaches to dealing with aspects of forest management. The Audit Team also found MNR staff to be committed to ensuring that management of the Forest proceeded wisely.

Another very positive development has been in the evolution of the Gogama Area Citizen's Committee (GACC). The previous IFA identified issues with the GACC as a troublesome aspect of the stewardship of ShiningTree Forest. It is therefore very notable that the GACC has improved its abilities and functioning to such an extent as to be considered one of the most positive aspects of the ShiningTree Forest. The committee works well, is well supported by the MNR and plays an important role in giving the area's citizens a voice in management of the forest.

Operations on the Forest were found to be of high quality. The quality of harvesting operations was good and there were no serious issues regarding renewal. All of the site preparation, artificial regeneration and tending activities inspected by the Audit Team were found to be of good quality. The Audit Team did find some rutting on a couple of lowland sites inspected and have made a recommendation to address this. The quality of watercrossings on the forest was generally very good, although the Audit Team has identified that a potential issue associated with culvert length needs additional consideration.

The discrepancy between planned and actual harvest levels has improved considerably over the last plan period compared to earlier ones. However, the relative parity of the proportions of planned harvest area and volume that were actually harvested masked some significant species-specific discrepancies. The volume of conifers harvested considerably exceeded that planned, although less-than-planned area of conifer-dominated stands was harvested, leading to the conclusions that the estimated yields are inaccurate. Conversely, the volume of hardwoods harvested was disproportionately lower than the area of hardwood-dominated stands which were harvested, particularly for birch.

This situation is being addressed, in a somewhat complicated manner by the amalgamation of the ShiningTree and Timiskaming Forests and the use of the Timiskaming's growth and yield curves for the whole amalgamated area. The new FRI for the ShiningTree portion of the Forest, which is anticipated within five years, is expected to improve the ability of planners to estimate harvest volumes.

Management of the values information of the Forest was a point of some concern. Although the Audit Team found that values prescriptions are applied appropriately in the field, there are issues related to the currency and accuracy of values information available to the Company. The perception of the MNR staff and company staff related to values information is considerably different, adding to the tension between the parties.

The Audit Team was impressed with the efforts of the Company in developing two approaches to issues related to aquatic values management. The Company's attempt to estimate thermal regimes seems a reasonable approach to dealing with the general

paucity of rigorously-collected data, and the Company's interpolated watershed estimation system showed a blend of practicality and innovation.

There was a relatively low level of non-compliance reported on the forest and there were no systemic issues related to non-compliances. The non-compliance rates reported by the MNR and the industry were similar, indicating comparable perceptions of compliance and non-compliance. The level of compliance monitoring undertaken by industry was good, but the Audit Team noted that the level of monitoring undertaken by the MNR has fallen off and should be increased to be consistent with their intended role in monitoring.

In conclusion, the Audit Team believes that the management of the ShiningTree Forest was in substantial compliance with the laws, licences and Forest Management Plan in effect during the audit period. The Audit Team finds that for the period under review, the ShiningTree Forest was managed within the bounds of sustainability as defined by the MNR.

Key factors entering into the Audit Team's conclusion regarding management of the Forest include:

- The Forest was managed in adherence to the required forest management guides and manuals;
- The harvest and regeneration are in balance and there is no overharvesting on the Forest, judging from the available data and observations made during our site inspection;
- The good performance of the company in implementing an appropriate silviculture program;
- The fulfillment of the goals and objectives of the 2001 FMP;
- The existence and implementation of well-considered AOC prescriptions which protect the non-timber values of the forest;
- The excellent performance of the GACC in providing input into the forest management process;
- Adherence to the conditions of the SFL; and
- The very high level of commitment and professionalism demonstrated by the company and its staff.

Chris Wedeles, Lead Auditor

2 INTRODUCTION

This document presents the results of the Independent Forest Audit (IFA) of the ShiningTree Forest, covering activities which took place during the period April 1, 2001 to March 31, 2006. The audit was undertaken by a team of professionals following the direction of the Ontario Ministry of Natural Resources' (MNR) Independent Forest Audit Process and Protocol[1] (IFAPP). The five-year period covered by this audit is also the period covered by the 2001 Forest Management Plan (FMP) for the ShiningTree Forest.

The last decade has seen several changes in the management of the ShiningTree Forest. Prior to 1997 the Forest was managed as a Crown Management Unit (CMU), administered by the Gogama Area Office of the MNR. In 1997 management of the Forest became the responsibility of ShiningTree Forest Inc. (STFI), a company comprised of traditional operators on the former CMU. A Sustainable Forest Licence (SFL) was issued to STFI on April 1, 1998, and shortly after, E.B. Eddy was engaged to act as the management agent for STFI. E.B. Eddy was purchased by Domtar in 1998, and Domtar staff led the development of the 2001 FMP. Effective September 1, 2003 the management contract arrangement with Domtar was transferred to Timiskaming Forest Alliance Inc. (TFAI) which became the new agent for STFI for the purpose of managing the SFL. On April 1, 2006, with the initiation of the 2006-2026 FMP for the Timiskaming Forest, the management of the ShiningTree Forest became integrated into the management of the Timiskaming Forest. The FMP treats both forests (i.e. the Timiskaming and the ShiningTree) as a single entity. However, an SFL for the ShiningTree Forest still exists and STFI continues to hold tenure for the Forest. Arrangements have been made for the SFL for the Timiskaming Forest to be amended to so that it will encompass the ShiningTree Forest. It is anticipated that the revised SFL for the Timiskaming Forest will come into effect around April 1, 2007. At that time the SFL for the ShiningTree Forest will be terminated and the ShiningTree Forest will cease to exist as a discrete entity.

The total area of the amalgamated Timiskaming Forest (i.e. which includes the ShiningTree Forest), as described in the 2006 FMP[2] is approximately 1.54 million ha. The area of the ShiningTree Forest, as described in the 2001 FMP[3] was approximately 332,000 ha. Therefore, the amalgamation of the ShiningTree Forest into the Timiskaming Forest increased the area of the Timiskaming Forest by about 27%.

The recent and on-going changes in management and tenure of the ShiningTree Forest have implications for the context and scope of this Independent Forest Audit. Normally an audit which covers the exact time frame of a five-year FMP, as this one does, is required to examine the process used to prepare the new FMP (in this case, the 2006 FMP) and examine many aspects of the content of the new FMP, including its objectives and management strategies. In this circumstance, however there is no new FMP for the ShiningTree Forest *per se*, as its management is fully integrated into the now-expanded Timiskaming Forest. Therefore this audit does not examine the full range of planning activities normally encompassed by an audit. The Timiskaming Forest underwent an Independent Forest Audit in 2004 and will be audited again in 2009, according to the

[1] Ontario Ministry of Natural Resources. 2006. Independent Forest Audit Process and Protocol. Queen's Printer for Ontario.
[2] Table FMP-1, Timiskaming Forest 2006 FMP
[3] Table FMP-1, ShiningTree Forest 2001 FMP

normal five-year IFA cycle. The process of preparing of the 2006 Timiskaming FMP and examination of the full content of the 2006 FMP will be covered in the 2009 IFA. Therefore all aspects of planning and management of the ShiningTree Forest landbase will be audited through either this IFA, or the 2009 IFA of the Timiskaming Forest.

In some cases this audit did examine selected content of the 2006 FMP. Those cases included instances in which the ShiningTree Forest area was specifically identified in the FMP regarding a proposed management action, or in relation to addressing a specific issue. The 2006 Timiskaming FMP was also examined in instances in which this audit identified an issue regarding a deficient or ineffective management activity. In those instances, a review of relevant sections of the 2006 FMP was conducted to see whether the issue is addressed in that plan.

The audit also reviews and assesses the activities of the Ontario Ministry of Natural Resources related to management of the ShiningTree Forest. The MNR is the provincial Ministry with the primary responsibility for managing the province's Crown forests and, as such, it oversees and regulates planning and operations on the Forest. The MNR also has management responsibility for fisheries and wildlife.

The MNR's involvement in management of the ShiningTree Forest has occurred primarily through its Gogama Area Office, which is part of the Timmins District. Management of the former (i.e. pre-amalgamation) Timiskaming Forest was primarily overseen by the MNR's Kirkland Lake District. The amalgamated Timiskaming Forest will cover lands under the management domain of four MNR Districts (see Section 3.3. for a fuller explanation), but the Kirkland Lake District has been designated as the lead district for the Forest, and will take a primary role in fulfilling the Crown's responsibilities related to forest management.

The Crown Forest Sustainability Act (CFSA) empowers the Minister of Natural Resources to manage Crown forests in Ontario and also provides the legislative basis for the Independent Forest Audits. The scope and process of an IFA is set out in the IFAPP. The IFAPP, which is reviewed and updated annually, contains more than 350 individual audit procedures. The IFAPP provides very detailed instructions on how audits are to be conducted and precisely what aspects of forest management are to be reviewed and assessed. This audit was carried out in a manner consistent with the directions set out in the IFAPP.

The results of each audit procedure are not reported separately in this report. Rather, they have provided the basis for the information in the following sections (primarily Section 3). The reader should assume that if a topic related to any procedure identified in the IFAPP is not discussed in the body of this report, then it was assessed and found to be in compliance with the requirements identified in the IFAPP.

In the following sections, many noteworthy aspects of the management of the forest are discussed. These discussions are followed in some instances by recommendations or suggestions. The IFAPP gives explicit definitions of these terms:

Recommendation - "sets out a high level directional approach to addressing a non-conformance. In most cases, recommendations follow from the observation of material non-conformances. In some instances, however, auditors may develop recommendations to address situations where they perceive a critical lack of

effectiveness in forest management activities, even though no non-conformance with law or policy has been observed."

Suggestion - "value-added advice which reinforces adaptive resource management and contributes to continuous improvement."

Of these two types of findings, recommendations are the more serious. Both recommendations and suggestions can be directed towards the Company and/or the Ministry of Natural Resources. Finally, if the Audit Team feels that an aspect of forest management is exceptional it may be identified as a best practice. The IFAPP provides the following definition:

Best practices – "practices so identified should be 'exceptional', not situations in which forest management is simply meeting a good forest management standard. Highly effective novel approaches to various aspects of forest management may represent best practices. Similarly, applications of established management approaches which achieve remarkable success may represent best practices."

The Audit Team found situations which should be corrected by the tenure holder acting in concert with district or regional MNR offices. Given the fact that the Timiskaming and ShiningTree Forests are being amalgamated, and that the Kirkland Lake MNR District has been identified as the Lead District for the amalgamated forest (See Section 3.3), it may be appropriate for the Kirkland Lake District to be the MNR's lead in dealing with some recommendations of this audit, whereas for others it will be more appropriate for the Gogama Area and Timmins District Offices to be the lead. The audit does not prescribe which of the MNR's field offices should be most active in dealing with specific recommendations; the Audit Team believes that it is best for MNR staff to make these determinations.

Some situations which we believe need corrective action are appropriately addressed by the corporate sections of MNR. These situations involve issues related to the general framework of forest management in Ontario, and although they have been manifested locally (hence, they surfaced in this audit), their resolution lies not in the field offices of MNR, but in the Main Office, Forest Management Branch, or other corporate parts of MNR. Issues which we believe should be addressed by the field units of MNR (i.e. District or Regional Offices) are addressed in recommendations or suggestions which simply identify "MNR". Recommendations or suggestions which we believe should be addressed by central branches or sections of MNR identify "corporate MNR" as having primary responsibility.

The team which conducted this audit consisted of five individuals, all experienced forest auditors, and all specialists in forest management. Appendix B provides details of their qualifications, roles and responsibilities.

Forest management in Ontario (and elsewhere) uses a variety of technical terms. We have tried to explain terms as they are used in this document, but readers unfamiliar with the forest management planning process in Ontario are referred to the document "A Guide to Forest Management Planning"[4] (available from the Ministry of Natural

[4] Ontario Ministry of Natural Resources. 1997. A Guide to Forest Management Planning. Ontario Ministry of Natural Resources Forest Information Series. 16 p.

Resources) for further explanations. In addition Appendix D lists the acronyms used in this report.

If after consulting the document, readers remain uncertain regarding any issue discussed in this report, they are encouraged to contact the Ministry of Natural Resources, Forest Management Branch.

2.1 AUDIT PROCESS

2.1.1 Purpose and overview of the process

The CFSA directs the Minister of Natural Resources to conduct a review of each tenure-holder every five years to ensure that the licensee has complied with the terms and conditions of its licence. The Independent Forest Audit fulfils this mandate, as well as complying with the direction to the Ministry laid out in Terms and Conditions #86 and 87 and Appendix 25 of the 1994 Class EA decision[5] to "*undertake operational audits, through the appointment of suitably qualified independent Audit Teams, which will include an assessment of compliance with the timber management planning process, approved Timber Management Plans, implementation manuals, and provincial policies, procedures, and legislation*". The Declaration Order[6] confirmed the importance of the IFAs and imposed some additional conditions on MNR; direction regarding the conduct of the audits is provided in Ontario Regulation 160/04 under the CFSA.

The IFAPP document states that the purpose of the audits is:

- *"assess to what extent forest management planning activities comply with the Forest Management Planning Manual and the [Crown Forest Sustainability] Act;*
- *assess to what extent forest management planning activities comply with the Act and with the forest management plans, with the manuals approved under the Act, and the applicable guides;*
- *assess the effectiveness of forest management activities in meeting the forest management objectives set out in the forest management plan, as measured in relation to the criteria established for the audit;*
- *compare the forest management activities carried out with those that were planned;*
- *assess the effectiveness of any action plans implemented to remedy shortcomings revealed by a previous audit; and*
- *review and assess a licensee's compliance with the terms and conditions of the forest resources licence.*"

2.1.2 Process

The IFAPP describes each of the components of the audit process and contains the audit protocol, which constitutes the main framework for the audit. There are eight principles within the audit protocol (reproduced in Appendix C). Each principle contains a series of criteria, which, if met, will result in the principle being achieved. For each

[5] Koven, A. and E. Martel. 1994. Reasons for Decision and Decision – Class Environmental Assessment by the Ministry of Natural Resources for Timber Management on Crown Lands in Ontario. Ontario Environmental Assessment Board.

[6] Declaration Order regarding MNR's Class Environmental Assessment Approval for Forest Management on Crown Lands in Ontario, approved by Order in Council 1389/03 on June 25, 2003.

criterion, a number of procedures are used to assess the auditees' compliance and effectiveness.

The audit commenced with the preparation of a detailed audit plan[7], which described the procedures to be used during the audit and assigned responsibilities to members of the Audit Team. A pre-audit meeting was held between representatives of the Audit Team, TFAI Inc., the Ministry of Natural Resources and the Gogama Area Citizens Committee (GACC). The primary purposes of the meeting were to familiarize the auditees with the audit process, review the Audit Plan, and to select the sites to be inspected in the field during the audit.

The focus of the audit was an intensive six-day visit, which included the following:

- Review of relevant files at the office of the Company in Englehart, and at the office of the Ministry of Natural Resources in Gogama;
- Interviews with TFAI Inc. staff, shareholders, MNR personnel, First Nations individuals, members of the GACC, and members of the public; and
- Field inspection of many representative sites where forest management activities were undertaken during the term covered by the audit, examining:
  - Results of harvesting and silvicultural operations in a range of forest types on different site types;
  - Results of practices intended to safeguard wildlife, aquatic, and tourism values; and
  - Results of road construction, maintenance and abandonment practices.

Table 1 shows the sample size and sampling intensity for key operations. The IFAPP requires that audits sample between 10 and 20% of the area treated during the audit period for harvesting, site preparation and other key activities. The audit was within, or exceeded this desired sample size for all activities. In Table 1 the sample intensity refers to the proportion of the total activity undertaken from April 1, 2001 to March 31, 2006 which was sampled during the audit.

Table 1. Sampling Intensity of the Audit

Feature	Total in Audit Period [a]	Total Sampled	Sample Intensity %
Harvest (ha)	12,461	3,543	28.4
Site Preparation (ha)	7,668	1968	25.7
Natural Regeneration (ha)	3,473	526	15.1
Artificial Regeneration (ha)	6,516	2384	36.6
Tending (ha)	8,285	1,756	21.2
Free-to-Grow Surveys (ha)	9,421	1,332	14.1
2004 FRT Areas (ha)[b]	7,427	2,579	34.7
Areas of Concern (no.)	Approx. 350	Approx. 65	Approx. 18.5
Roads (km)	58.9[c]	25	42.4
Water crossings (bridges & culverts)	Approx. 100	Approx. 30	Approx. 30.0

[a] – Totals for audit period were based on the to-date figures in the draft 2005/06 Annual Report.

[7] ArborVitae Environmental Services Ltd. ShiningTree Independent Forest Audit Plan, August 1, 2006.

[b] - Indicates the area of sites reviewed as part of a financial "specified procedures" review for all Forest Renewal Trust areas in 2004. The IFAPP requires that the IFA sample at least 20% of these areas.
[c] – Number shown is the length of primary and secondary constructed in the audit term, according to Table AR-10 of the draft 2005/06 Annual Report. Many kilometres of tertiary road were also constructed. During the course of the audit, the Audit Team drove on approx. 300 km of roads of all classes (i.e. primary, secondary, and tertiary).

Table 1 is intended to portray an approximate level of effort only. There are several factors which preclude too-precise an interpretation of the figures presented in the table. Although roughly 50 stops were made during the field inspection portion of the audit, more than one aspect of forest management was inspected at most stops. For example, at stops where harvesting had taken place, harvesting practices, compliance issues, road construction, Area of Concern (AOC) protection, site preparation, and regeneration activities may all have been inspected. Finally, although areas are shown in Table 1, it should be noted that we did not inspect every hectare of the blocks we visited – such a level of effort would be infeasible.

Examples of operations were examined in each major forest unit present on the Forest, representing a range of harvesting systems, harvest operators, and silvicultural treatment packages. These included sites that had been harvested in the audit period using clearcut and shelterwood harvest systems. A number of sites where renewal activities had been conducted during the audit period were visited to evaluate the appropriateness and quality of these treatments and to perform an initial evaluation of their effectiveness. These included sites that were site prepared, planted, and seeded, and those for which natural regeneration was reported.

Figure 1 shows the location of most of the sites visited during the audit. Some additional sites, inspected ad hoc, during the course of the field visits are not shown on the map.

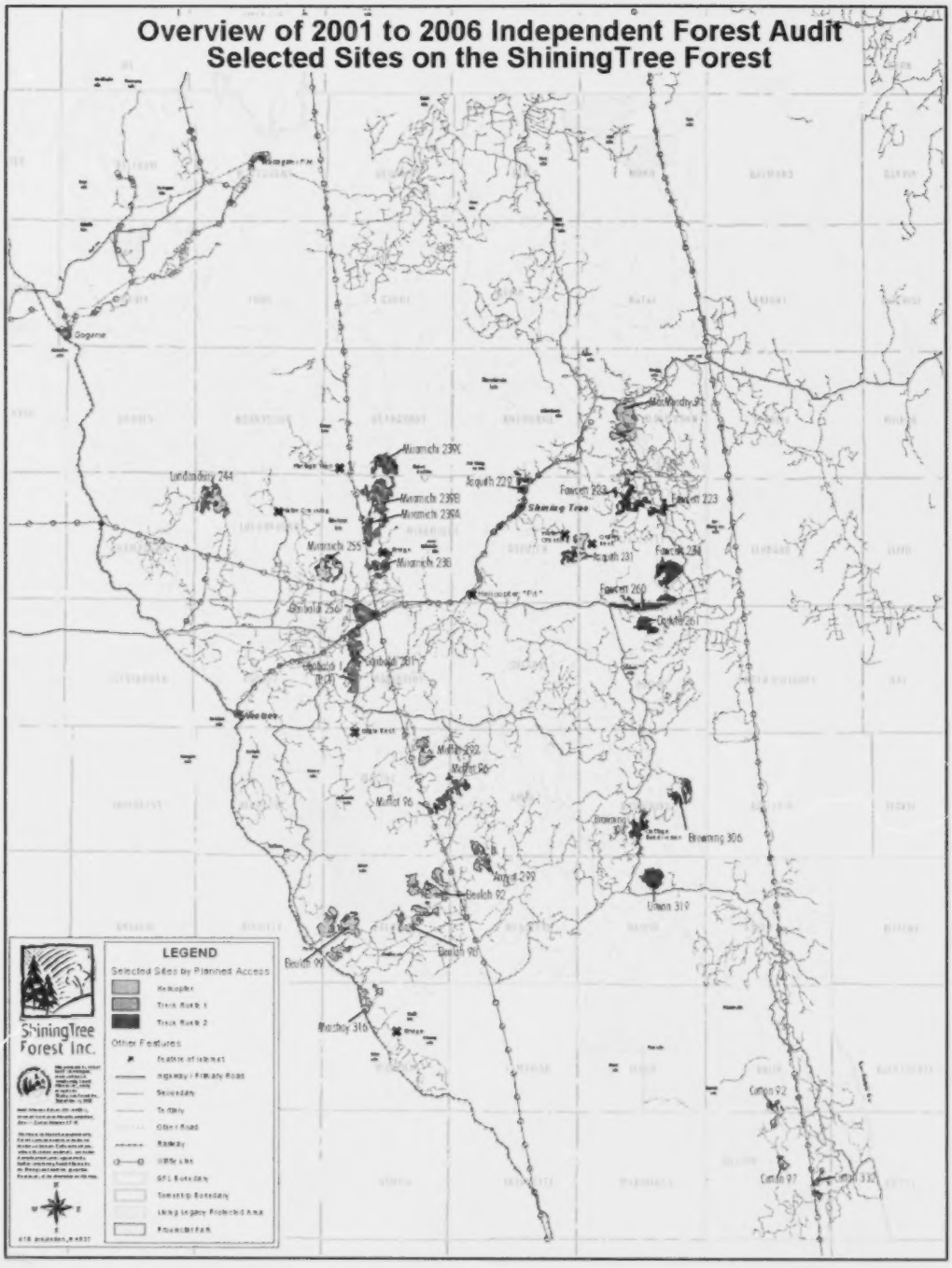


Figure 1. Locations of planned sites visited during the audit's field inspection. (Several additional sites were visited ad hoc.) Map supplied by Virtual Earth Technologies.

2.2 FOREST MANAGEMENT CONTEXT

2.2.1 Location of Forest Management Unit

The ShiningTree Forest is located in northeast Ontario, roughly equidistant between Timmins and Sudbury along Highway 144. The major town in the forest is Gogama, with a population of roughly 500 people, and it is the location of the MNR Area Office. The communities of Westree and ShiningTree are also located within the ShiningTree Forest and are much smaller. The TFAI office, from which the Forest is managed is in Englehart, east of the ShiningTree Forest, but in the midst of the amalgamated Timiskaming Forest. Figure 1 shows the location of the ShiningTree Forest.

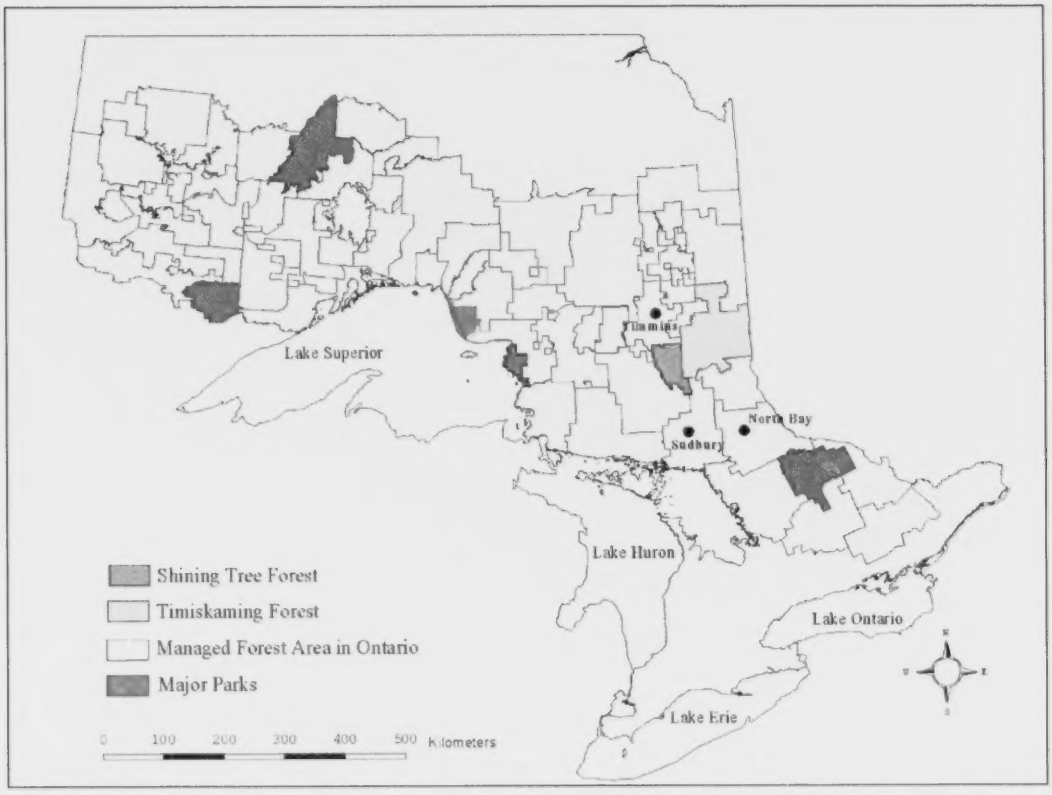


Figure 2. Location of the ShiningTree Forest

2.2.2 Brief Description of the Forest

This section presents an overview of some characteristics of the ShiningTree Forest – more detailed description can be found in the 2001 FMP, which was the source of much of the material presented here.

The ShiningTree Forest is small by today's provincial standards, explaining the rationale for its amalgamation into the Timiskaming Forest. As Table 2 shows, it covers about 332,000 ha, about 91% of which is forested. The Crown forested landbase (excluding water and non-forested land) is approximately 291,600 ha. Crown managed area (land

and water) accounts for 96.3% of the total landbase, with the remainder comprised of unmanaged Crown land, private land and First Nations reserve areas.

Table 2. Area description of the ShiningTree Forest. (Source: 2001 ShiningTree Forest FMP, Table FMP-1)

Land Class	All Land Ownerships[a]		Crown Managed Forest	
	Area (ha)	Percent	Area (ha)	Percent
Water	26,773	8.1	25,938	8.1
Non-forested land	2,732	0.8	2,648	0.8
Non-Productive Forest[b]	25,612	7.7	24,385	7.6
Productive Forest[c]	277,107	83.4	267,207	83.5
Total Forested Area[d]	302,719	91.1	291,592	91.1
Total	332,225		320,178	

[a] - Includes Crown Managed Forest, Parks, Private, and Federal Land
[b] - Non-productive forest includes areas incapable of growing commercial trees, such a muskeg, rock, brush, etc.
[c] – Productive forest includes all forest areas capable of growing commercial trees.
[d] – Total forest area is the sum of productive and non-productive forest areas.

Figure 3 shows the working group and age-class composition of the Forest's stands.

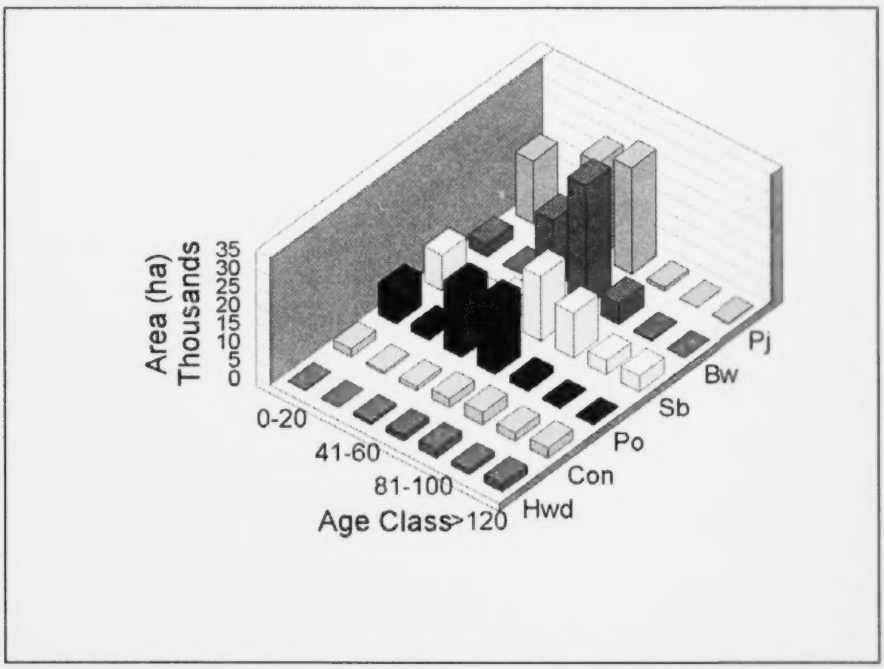


Figure 3. Productive Crown forest working group (leading species) and age-class structure of stands in the ShiningTree Forest (Pj – jack pine; Bw – white birch; Po – poplar; Con – other conifers (balsam fir, red pine, cedar, and white spruce); Hwd – other hardwoods (hard maple, soft maple, and yellow birch).

By virtue of the relative abundance of tree species, Figure 3 shows that the Forest is predominantly boreal in nature. The southern part of the Forest does have some Great Lakes-St. Lawrence zone tree species (sugar maple, red maple, yellow birch, white pine and red pine), but as the figure shows these species together comprise less than 3% of the Forest's working group area. In this location, at the northern edge of their ranges, these species tend to be of poorer quality as they are subject to frost cracks and other defects

Figure 3 also shows that the Forest has a rather compressed age-class structure with most of the stands (approx. 62%) in the 40-60 yrs and 60 –80 yrs age classes. The age class composition is a result of large disturbances, typical of those which occur periodically in the boreal forest. In the 1930's, 40's and 50's approximately 250,000 ha of the Forest was burned. Periodic infestations of spruce budworm have also had a substantial impact on the forest - from 1971 to 1986 the area of the balsam fir working group, their preferred host species, declined from 40,000 ha to 3,200 ha.

The topography of the forest is varied, ranging from rugged in the southern end to gently rolling in the middle and north. The area of the forest was completely glaciated during the last ice age, and this history is borne out in its present-day landforms. Moraines, eskers and kame complexes portray different aspects of glacial advance and retreat through the area.

The Northern Ontario Engineering and Geology Terrain Survey (NOEGTS) identifies that 86% of the Forest area is comprised of sand and till soils. The sandy nature of the soils leads to well-drained conditions. About two-thirds of the forest is characterized as dry by NOEGTS, with the remainder split equally between mixed wet and dry, and wet drainage classes. The dry and well drained profile of the Forest's soils is reflected in the relative abundance of working groups shown in Figure 3.

The Forest supports a wide variety of animal species, with all of the typical boreal wildlife species present, including moose, bear, wolf, marten, lynx, beaver and many other species. The only species on the Forest which is regulated under Ontario's Endangered Species Act is the bald eagle, although eagle populations have recovered significantly over the last couple of decades and it is now classified as a "species of special concern", which is a category of less gravity than "endangered". Other animals recognized as "species at risk", including gold eagle and great gray owl have been sighted on the forest, but are not known to breed on there. Other high profile species which occur on the forest include osprey, great blue heron, and several hawk and owl species.

The Forest offers excellent opportunities for outdoor pursuits including hunting and fishing. The tourism industry in the area is largely based on providing room and board, equipment and supplies to recreationalists – there are road accessible tourism lodges but no remote tourism lodges on the Forest.

The Forest contains three provincial parks and one conservation reserve totalling approximately 7,000 ha, or about 2% of the Forest. Two of the parks and the conservation reserve were added recently during Ontario's Living Legacy exercise.

2.2.3 Relevant management issues

Amalgamation with the Timiskaming Forest

As described above, the ShiningTree Forest is being amalgamated into the Timiskaming Forest. As the Forest was small by current-day standards, the move to merge it with an adjoining forest seemed inevitable. TFAI was a logical selection in this regard given the Company's good management record and the fact that many operators on the ShiningTree Forest also operate on the Timiskaming Forest. The amalgamation process has gone relatively smoothly, aided by the fact that TFAI became the management contractor for STFI in 2003 and so has become intimately familiar with the Forest. Prior to the amalgamation the Timmins District of MNR was the lead government agency dealing with the ShiningTree Forest and the Kirkland Lake District was the lead for the Timiskaming Forest. An inter-district protocol is being developed to clarify management responsibilities of the two MNR Districts for the merged Forest. Although not a negative issue, it is the dominant aspect of the management context of the Forest for this audit.

Ministry – Industry Rapport

During the course of the audit It became apparent to the audit team that the relationship between TFAI and Gogama MNR staff is not healthy and considerably beyond the natural tensions which sometimes exist between government and industry staff. Challenging issues which exist in managing a tenured forest area are being made all the more vexing by the strained relationship. The difficulties produced by the impaired rapport are recognized by both the MNR and Company. Although not yet at the stage where the rapport is strongly affecting forest management in a detrimental manner, the likelihood that this may occur is a concern. The energies consumed by dealing with the rapport would undoubtedly be better spent in more productive aspects of managing the forest.

Values and Water Crossings

Several aspects of values management arose during this audit. The process by which values updating is intended to occur does not seem to be functioning in an efficient manner, leading to some operational difficulties in forest management. In addition, the Company and Gogama area MNR staff have somewhat differing opinions regarding the quality of two of the systems developed by the Company to facilitate management efforts related to watercrossings. These are described in detail in Section 3.3.7.

Gogama Area Citizens Committee

The previous Independent Forest Audit identified that the Gogama Area Citizens Committee (GACC) was not functioning well and was not meeting the mandate envisioned for it. The audit identified the following reasons for the GACC's difficulties:

- A low population base in the management unit area, which limits the number of eligible volunteers;
- Difficulties in achieving a shared level of understanding of terminology impedes communication;
- A perception on the part of GACC that the Committee has little impact on decision making, and is presented with "done deals"; and
- A decline in the priority that some GACC members place on participation, probably caused by the frustrations engendered by the above issues. GACC

members are busy people and the downward trajectory of average attendance between 1996 and 2001 suggests a fall-off in the priority associated with attendance.

This audit expended considerable effort examining the GACC and the manner in which it functioned.

3 SUMMARY OF AUDIT FINDINGS

3.1 COMMITMENT

A demonstrated commitment to Sustainable Forest Management (SFM) is an important part of the Independent Forest Audit. Both the Ministry of Natural Resources and the Company are expected to demonstrate this commitment with written statements and with an understanding of the concept in interviews with staff.

MNR has prepared a number of policy documents at the corporate level that demonstrate a commitment to SFM including: A Policy Framework for Sustainable Forests, Beyond 2000, and the legislative support of the Crown Forest Sustainability Act. As well, numerous guidelines and regional policies reinforce this important concept.

Ministry staff involved in the audit were knowledgeable about these policies and selected portions of the policies were available throughout the Gogama Office where staff worked.

Timiskaming Forest Management Inc. was responsible for overseeing management of the forest for a portion of the audit term, and for preparation of the 2006 FMP, and thus needed to demonstrate commitment to SFM. It is clear that TFAI did demonstrate a commitment to SFM, on all of its management area, including the ShiningTree Forest. The Company prominently references sustainability and safeguarding the long-term future of the forest on its web site. More importantly, the Company's performance during the audit period was at a very high quality, as the rest of this report bears out, and the management of the forest has benefited under TFAI's management.

In addition to prominent displays of its corporate responsibility for SFM, TFAI has developed an extensive library of forest management information that clearly commit to SFM as well as worker safety and a more general emphasis on environmental management. Information in the library thoroughly reviews the policies and concepts of Environmental Management Systems, outline a method of updating the Company's systems as needed, and promotes understanding of the ideas with staff.

Discussions with both MNR and TFAI staff during the course of the audit indicated a personal commitment to SFM and responsible concern for the physical and work environment.

3.2 PUBLIC PARTICIPATION

3.2.1 Local Citizens Committee

The 2001 Independent Forest Audit indicated several problems with the Local Citizens Committee, called the Gogama Area Citizens Committee (GACC) for the ShiningTree Forest. As noted earlier, these problems included: high membership turnover, poor attendance, difficulty understanding the terms of reference for the committee, problems building consensus and poor communication with the planning team and MNR.

As stated in the 2001 IFA report "The reasons for this state of affairs are complicated

and interrelated, they include:

- a low population base in the management unit area which limits the number of eligible volunteers;
- difficulties in developing a shared understanding of terminology impedes understanding;
- a perception on the part of GACC that the committee has little impact on decisions, and is presented with "done deals"; and,
- a decline in the priority that some GACC members place on participation, probably caused by frustration engendered by the above issues...."

In the months and years following the 2001 audit, the MNR engaged in a series of measures to improve the committee, and members of the GACC took the findings and recommendations from the audit to heart and initiated a series of steps to improve the functionality of the committee.

The September 2002 minutes of GACC show that an extensive discussion took place about the role of GACC, the function of the Committee, participation by members, the role of MNR and the way that healthy interactions should occur in this context. In October 2002 the committee listed its accomplishments to date and started the process of building a better committee. They realized that a better "terms of reference" was needed as well as education for members as to the role they should play in forest management. These two meetings represent the beginning of significant improvements in the committee and its role in forest management in the ShiningTree area.

Highlights of changes to the GACC in the 5 year period of the audit include:

- recruitment of new members from the community;
- a renewed effort by MNR staff to support the committee;
- careful explanation of terms used in forestry by MNR staff;
- considerable time preparing for meetings by MNR staff, using visual aids to explain issues and forestry practices;
- field tours to show members forest operations in progress on the ground;
- a new Chair of the Committee from the Gogama area, and
- new and improved Terms of Reference.

As well, all members were asked to go back to the organizations they represented and ask for support as a representative of the committee, and all members were asked to prepare a new letter as to why they wanted to be on the committee.

Table 3 illustrates the participation in the GACC over the five year period. (Because some of the representatives changed and the categories of representation changed, some of the figures in the table had to be estimated from meeting minutes.) The table illustrates that participation in the committee increased substantially over the five year period as both MNR and local people concentrated on building a better committee.

Table 3. Participation on the GACC as indicated by numbers of meetings attended per year by GACC members representing different constituencies.

Year	2001	2002	2003	2004	2005	Total
Number of scheduled meetings	5	7	10	10	13	45
	Attendance by Committee Representatives					
Cottagers	5	7	7	9	12	40
General public, ShiningTree	4	5	6	6	9	30
General public, Gogama	5	6	10	10	12	43
General public, Westree	0	2	2	0	0	4
Trappers Bear Management	3	0	3	6	6	18
Chamber of Commerce	0	4	7	6	6	23
Gogama Local Services Board	2	4	6	5	7	24
Independent Loggers	v*	v	v	v	3	3
Forest Industry	v	v	v	v	4	4
Game and Fish Clubs	3	3	6	6	9	27
NOTO roadside tourism	0	4	7	7	8	26
Mattagami First Nation	0	0	2	3	1	6
MNR Staff	5	7	10	10	12	44
SFL Staff	1	2	5	8	9	25
Labour	4	6	8	7	2	27
Total	32	48	79	83	100	344

*v- vacant

Although the representative of the Mattagami First Nation did not attend most of the GACC meetings, the individual was part of the Planning Committee and was also part of the First Nations Advisory Team that took part in the Forest Management Planning Process for the ShiningTree portion of the Timiskaming Forest. As well the Chair of the GACC was also on the Planning Team and was able to communicate both First Nations concerns and GACC concerns to the Planning Team.

The Ministry of Natural Resources was diligent in having staff attend meetings and at least one representative of the MNR was at every meeting. The District Manager attended occasionally and the Area Supervisor attended regularly and their presence contributed to a much better working relationship. The Area Forester was in attendance at most meetings and the committee was very appreciative of her presence.

In addition to the assistance provided by the Ministry of Natural Resources, TFAI staff played an active and supportive role in the GACC, after they assumed responsibility for the ShiningTree Forest in September 2003. Company staff attended most meetings, prepared several presentations to help explain forest management practices and helped the Committee in contributing to the development of the 2006 Forest Management Plan.

The Audit Team interviewed 10 members of the current 12 member GACC. Nine of the 10 people reported that they were satisfied with the committee structure, people were encouraged to participate, and the committee was meeting its purpose. All nine members believed that MNR was presenting them with real decisions and MNR was listening carefully to the ideas of the Committee.

The Audit Team attended a meeting of the committee on Wednesday Oct. 4 at which 10 members were present and MNR and TFAI were each represented by two staff

members. The meeting was vigorous, people expressed their opinions forcefully and with passion, and yet the atmosphere was open and appreciative of the honest differences that occurred. The two decisions that were made were arrived at by consensus.

This meeting was a good example of how a Local Citizens Committee should work to be helpful in the process of forest management.

3.2.2 FMP Standard Public Consultation Process

As the 2006 FMP covers the integrated Timiskaming Forest, its development process was not audited as part of this IFA. The process implemented in developing the 2006 FMP will be audited as part of the 2009 IFA for the Timiskaming Forest.

3.2.3 Native People's Consultation

ShiningTree 2001 Plan

In preparation for the FMP, 13 different First Nations were contacted to ascertain their interest in this Forest Management Unit. Of the 13 contacted, 3 expressed a vested interest in the area covered by the ShiningTree: Mattagami First Nation, Matachewan First Nation and Wahnapitae First Nation. During the period of implementing the ShiningTree Plan, all three First Nations were involved in discussion with the Company and the MNR concerning protection of Native Values. As well, the representative from the Matachewan First Nation worked with the Mattagami First Nation representative in providing input to the Plan and implementation of the Plan.

Meetings were held at the communities of all three First Nations to invite members of the area to come and discuss the Plan and provide input. First Nation values were available for consideration just after the second open house.

Two areas were identified as sites of local historical significance to Mattagami First Nation that might be impacted by proposed allocations in the 2001 FMP. Discussion ensued and the First Nation agreed that the management protection provided in the plan was adequate to deal with the concern. One value was identified by the Matachewan First Nation on the ShiningTree Forest and a protection prescription was applied and was acceptable to the First Nation.

The Audit Team talked to representatives from the Mattagami and Wahnapitae First Nations and both agreed that protection of First Nations values was appropriate and the Company and MNR were cooperative in dealing with the issues raised.

Timiskaming Forest Management Plan

This audit considered how the development of the 2006 FMP dealt with Native People's consultation for those First Nations with an interest in the ShiningTree portion of the integrated Timiskaming Forest.

In preparation for the 2006 Timiskaming Forest Management Plan invitations were sent to sixteen different Native Communities to invite them to participate in the planning process. Among the First Nations contacted were the three who indicated that they had

an interest in the ShiningTree Forest in the consultation conducted in the development of the 2001 FMP.

Of the sixteen First Nations contacted, six had an interest in at least part of the Timiskaming Forest, and two (Mattagami and Matachewan) indicated interest in the ShiningTree portion. The Mattagami First Nation identified some sites of local historical significance and assisted TFAI in developing Areas of Concern that protected those values. All of Mattagami First Nation's concerns were dealt with in a manner satisfactory to the First Nation. Matachewan First Nation identified numerous values throughout the Timiskaming Forest, although with relatively few on the ShiningTree portion. The Ministry and the TFAI were instrumental in resolving these concerns and no outstanding issues were identified by the audit team.

A very positive development on the Mattagami First Nation is the creation of a computer program that assists companies, First Nations and the MNR in recognizing, recording and bringing Native values to the Forest Management Planning Process. The program, created by a member of the Mattagami First Nation, is titled Cultural Heritage Resource Information System (CHRIS). Several hundred hours of interviews with elders of the First Nation have been recorded on video tape and linked to a GIS system. This means that for any identified value on a map, a click on the GIS icon that identifies the value will call up a video clip of the elder discussing the value and why it is important. As an educational tool, this program is invaluable in communicating the values of the First Nation to everyone working in the area. In addition, it means that if questions come up during a planned operation or for some other reason, an answer to why the value is important and the basis for protecting the value is readily available. This tool has also meant that the time between when a request for information is made and when an answer can be available is as short as one or two days. This is an important step in forest management in this area and hopefully will find more use in the future.

3.2.4 Annual Work Schedule Public Inspection

Good efforts were made by TFAI and the MNR to identify, contact and consult persons who may be directly affected by operations included in AWSs. The MNR files of notices to the public for inspections of AWS, aerial herbicide spraying, slash pile burning and mining claims were well organized and contained the appropriate notices in binders that were easy to follow and contained all the needed information. MNR has followed the requirement for public consultation on the Annual Work Schedule, Aerial Spraying and Slash Pile Burning. Timing requirements were met in all cases.

3.3 Forest Management Planning

Inter-District Memorandum of Understanding Regarding Forest Amalgamation

The Timiskaming Forest overlaps with four MNR Districts. Prior to amalgamation with the ShiningTree Forest, portions of the Timiskaming Forest existed in the Kirkland Lake, Cochrane, and Timmins Districts. The proportion of the Forest in the Timmins District has increased considerably with the amalgamation of the ShiningTree Forest into the Timiskaming Forest. A small portion of the Sudbury MNR District included in the

ShiningTree is also now part of the Timiskaming Forest. To facilitate a clear understanding of the relative responsibilities of the MNR offices in management of the amalgamated Timiskaming Forest, a Memorandum of Understanding (MOU) document is being developed. The MOU identifies the roles and responsibilities of the MNR's offices and staff in administration of the Forest and has the following objectives:

- Increase the effectiveness of forest planning and operational efforts on the Timiskaming Forest; and
- Provide a streamlined and efficient approach for the administration of the forest program on the Timiskaming Forest.

The MOU identifies that the Kirkland Lake MNR office will be the lead in dealing with Timiskaming Forest, but that other Districts will continue to be involved in management of the landbase. The document is quite detailed and deals with planning, monitoring, reporting, licensing, audits, etc. In general the MOU identifies that for issues either specific to Kirkland Lake District, or for the Forest as a whole, Kirkland Land District staff will play a lead role, consulting with other Districts as appropriate. In circumstances where an issue relates only to one of the other three Districts and will not affect the Forest as a whole, the sole affected District will lead the process dealing with the issue and keep the Kirkland Lake District informed of the matter. In following this process the Timmins District will continue to be involved in management of the landbase formerly associated with the ShiningTree Forest. There are many examples of similar arrangements within the MNR as most Sustainable Forest Licence areas cross district boundaries.

The process of developing the MOU has been going on for some time; while there is no great urgency associated with its completion, the audit team believes it should be completed in the near future to minimize the possibility of confusion regarding the planning and management responsibilities of the various MNR offices.

Recommendation # 1

That MNR complete the Memorandum of Understanding regarding Roles and Responsibilities for the Administration of the Timiskaming Forest by April 1, 2007.

Scope of Audit Assessment of Planning Activities

Under normal circumstances, this audit would review the development process of a forest management plan produced during the audit period (in this case, the 2006 Timiskaming plan). However, for the reasons described above in the Introduction (Section 2), many aspects of plan development covered in this section were not audited in detail.

3.3.1 Planning Team Activities

The activities of the planning team in the review period were focused on preparing the 2006 FMP for the amalgamated Timiskaming Forest and so were not audited.

3.3.2 Resource Stewardship Agreements

Resource Stewardship Agreements (RSA's) are made between an SFL-holder and a resource-based tourism licensee with business interests on the Forest. The intent is to

facilitate the ability of the two parties to negotiate solutions to issues between them. Because requirements related to RSA's came into effect for plans implemented as of April 1, 2003, they did not apply to the 2001 FMP for the ShiningTree Forest.

As part of the process of preparing the 2006 Timiskaming FMP, the Company did offer to negotiate an RSA with the registered tourism businesses on the (amalgamated) Timiskaming Forest. Since the scope of this audit is limited to the ShiningTree Forest, the Audit Team reviewed the initial process and follow-up negotiations between the Company and interested tourism outfitters on the ShiningTree portion of the Forest.

The letters in the initial mailout by the Company were dated November 28, 2003, and the Ministry of Tourism sent follow up letters to non-respondents dated March 30, 2004. There were 14 registered tourism businesses on the ShiningTree Forest, and several of them expressed interest in an RSA. None of these negotiations resulted in signed RSA's, but there are several special AOC's that were developed for tourism operators, including on the ShiningTree portion of the Forest, as a result of the negotiations. The AOC prescriptions are included in the 2006 FMP and cover such aspects as viewscapes, timing restrictions, and aesthetic reserves along some of the lakes used by the outfitters' clients.

The 2006 FMP includes harvest allocations that are close to a number of tourism outfitters, and there has been considerable concern on the part of some over the impacts of harvesting operations on their businesses. This is understandable. From the discussions that the Audit Team had, the Company has been able to conclude non-RSA arrangement with the affected operators that are satisfactory to all parties. One operator had concerns with the conversion of an off-site poplar stand to jack pine near his lodge – this is part of plan direction and was the only issue that the Audit Team was aware of on which the Company and tourism operator could not reach agreement.

3.3.3 Sources of Direction

The sources of direction used for the 2006 Timiskaming FMP were not audited. The Annual Work Schedules produced during the audit term were consistent with the sources of direction identified and used in the 2001 FMP. Discussion of the implementation of management actions throughout this report addresses the manner in which field operations were consistent with various sources of direction.

3.3.4 Plan Introduction

The introduction of the 2006 Timiskaming FMP was not audited.

3.3.5 Management Unit Description

The management unit description of the 2006 FMP was not audited. However, aspects of the Forest Resource Inventory were reviewed as they are very relevant for the management activities on the ShiningTree Forest.

The Forest Resource Inventory (FRI) for the ShiningTree Forest was derived from 1986 photography, and was completed by MNR in 1990. For the preparation of the 2006-2026 FMP, the inventory was updated to reflect actual harvest depletions up to March 31, 2004, and free-to-grow survey results up to November 2004. TFAI's silvicultural system

and inventory update process made use of innovative procedures for tracking depletions, silvicultural activities, and free-to-grow areas. The inventory update process meets or exceeds all requirements.

Values maps and other aspects of values management, which related to descriptions of the management unit, are discussed in several places in this report (Sections 3.3.7, 3.3.9, and 3.4.1).

3.3.6 Objectives and Strategies/Management Alternatives

In keeping with the parameters of this audit, the Audit Team read and discussed the goals, objectives and strategies in the 2006 Timiskaming Forest FMP with the intent of identifying and focusing on any aspects that pertained expressly to the former ShiningTree Forest. However, the goals, objectives and strategies were developed for the entire Timiskaming Forest, and none specifically singled out the ShiningTree Forest or applied only in the former ShiningTree area.

The 2001 ShiningTree IFA observed that many of the objectives in the 1996 TMP were very general, with the only exception being the harvest objective, which specified the planned harvest area and volume for the five-year period. In the 2001 FMP, the objectives were much more comprehensive and specific. For example, the forest diversity objectives were organized hierarchically, with landscape, stand and genetic levels. Many of the objectives had quantitative targets, and a number had five-year quantified targets associated with them. The degree to which these objectives and targets were achieved is assessed in Table 14.

The 2006 Timiskaming FMP contained a strategy to increase the abundance of red and white pine on the unit, to bring the forest composition closer to historical levels. This restoration goal applies most strongly to the more southern portions of the Timiskaming Forest, where white and red pine are most suitable species. The 2006 FMP notes that this goal is derived in part from the strategic direction in the 2001 ShiningTree FMP.

3.3.7 Operational Planning

The operational part of the 2006 FMP pertains to the entire Timiskaming Forest and so does not come into the scope of this audit.

Harvesting and Utilization

The operational part of the 2001 FMP was reviewed to provide a description of how the harvest and forest cover related strategies identified in the FMP were to be implemented. It is of interest that 2,875 ha were declared surplus, most of which was in the white birch forest unit. There had long been little demand for non-veneer birch – birch was poorly utilized in the 1996 plan period when only 10% of planned harvest area was actually cut. While there was interest in extracting the conifer component of these stands, the lack of a market for birch meant that harvesting them would have wasted the birch and entailed expensive silviculture. However, early in the plan period, Grant Forest Products Inc. began to utilize white birch furnish in its mills in Timmins and Englehart, and Domtar also increased its use of white birch in the Espanola mill. As a result, most of the surplus area, or a total of 2,549 ha, was amended back into the planned harvest

area through four administrative amendments approved in 2003 and 2004.

Harvest eligibility criteria remained consistent between the 2001 FMP and the 2006 FMP for the Timiskaming Forest.

Silvicultural Ground Rules

The SGRs for the 2001 FMP for the ShiningTree Forest were previously reviewed during the 2001 Independent Forest Audit, and found to be appropriate. Forecasts for renewal and renewal support activities in the 2001 FMP were reasonable and were consistent with the selected management alternative.

There was only one exception to the Silvicultural Guides listed in the 2001 FMP, for commercial thinning of jack pine in the PJ1 forest unit. No commercial thinning was conducted, however, during the audit period. The FMP indicates that although no commercial thinning was planned for the 2001-2006 period, the treatment may be used in subsequent FMP terms.

The FOPs contained in the AWS for the audit period were found to be consistent with the SGRs contained in the 2001 FMP.

Values Information Management

Values management is often a difficult part of managing Ontario's forests due to lack of information, inadequate government funding of values collection[8], and the transient nature of some values (i.e. stick nests), and so it is not surprising that issues related to values arose during the audit.

The 2001 FMP identified values information gaps for thermal regimes on unsurveyed and unknown waterways, and for stick nests. In an effort to deal with this, the MNR reported that it surveyed over 70 known and previously recorded nest locations during the audit term. During the audit the Audit Team noticed that there were numerous new or dropped value-related alterations identified during the MNR reviews of the AWSs and FMPs. Company staff found it frustrating that a large number of values seemed to come to light during MNR reviews of their planning documents (the FMP, FMP amendments, AWSs and AWS revisions). This leads to the question of why the values were not represented in the Natural Resource Values Information System (NRVIS) so that they could be incorporated prior to MNR's review, or reported to the Company in anticipation of their planning efforts. MNR staff described that an orderly process occurs between the time when a value is first identified until it becomes incorporated into the NRVIS, which is available for use in planning. MNR staff acknowledge that there can be bottlenecks in their implementation of the process, which can delay updates of the values information for up to half a year. Delays of this length seem unreasonable. Company staff also expressed concern about the quality of the values information as some values for which there is long-standing knowledge are not accurately incorporated

[8] Many recent IFA reports have drawn attention to this. Seventeen IFA reports covering the periods 2000-2005 have drawn attention to the fact that values funding is not adequate to meet government responsibilities. In addition, a recent report from the Minister's Council on Forest Sector Competitiveness (May 2005) identified the lack of the MNR's attention to values updating as an important deficiency in forest management.

into NRVIS. Given the evidence consisting of the large number of corrections required to planning documents to deal with values information, the Audit Team believes that the MNR should review the quality of the values database for the Forest and improve the manner in which values information is managed.

Recommendation # 2

That by April 1, 2007 MNR, in consultation with the Company, review the quality of the values information in the NRVIS database for the Forest, and that MNR revise the database so that it accurately reflects knowledge of existing values and ensure that the data are maintained consistent with the direction in the Forest Information Manual.

Company staff also expressed concern regarding the MNR's responses to their submission of information when a new value is found in the field. The FIM clearly identifies (Section 4.4.1.1) that it is the MNR's responsibility to verify the accuracy of such information provided by the SFL-holder within two working days of receiving the information "if the value may be negatively affected by current forest operation". Although MNR staff expressed confidence in the capacity of many operators to treat values appropriately even if MNR cannot get into the field to verify them, this puts the onus of responsibility on the operators and increases their risk should inaccurate identifications (say, of stick nests) be made (because the prescriptions to protect stick nests vary between the species). MNR staff note that they believe that it is not always necessary to conduct a field visit to verify a value. While this may be true, the Audit Team believes that such an approach should be reserved for instances in which no potential liability may result. The Audit Team believes that, given the Company's unease with the MNR's approach and its reluctance to assume unnecessary risk, the MNR should endeavour to verify values in the field within the time limits identified by the FIM.

Recommendation # 3

That MNR conduct site inspections of values reported by the Company within the two-working-days of receiving the information if the value may be negatively affected by current forest operations.

We note that one of the suggestions from the previous IFA for the ShiningTree Forest requested the MNR and STFI to develop procedures to clarify responsibilities for updating data records when unexpected values are discovered in plan implementation. This suggestion is not reported upon in the Status Report of the previous IFA and given that similar issues still exist on the forest, the audit team believes that little was done to effectively deal with the previous audit's suggestion.

Finally, we note that the impression given to the Audit Team by Gogama MNR staff and Company staff of the management of values information was very different. The Audit Team finds this disconcerting. Friction regarding the management of values information is one of the contributors to the strained relations which exist between Company staff and Gogama MNR staff, described in more detail in Section 3.4.7.

Values Surveys

MNR funding for collection of values information is generally provided in synch with FMP planning. The intent of the funding is to allow MNR staff to survey the forecast allocations so that operational plans can make use of current values information. MNR staff report that the funding available to them was sufficient to survey only 40-50% of the area required. This is obviously part of the problem contributing to the circumstances described above. This under-funding is frustrating for MNR staff who have the responsibility, but not the resources, to meet the values collection mandates identified for their agency by the FIM. In addition, because not all areas which are eventually harvested are included in the plan's initial allocations (due to shifts in operations which occur in response to circumstances not foreseen in plan development), the surveys do not cover a portion of the area harvested during the plan term. Also, some values (primarily stick-nests) may not exist at the time surveys are flown if they are too far in advance of the planned harvest. By making FMP values funding disproportionately available during plan development, the opportunity to conduct more appropriately targeted values surveys is foregone and the likelihood of missing values which exist at the time of harvest is increased. Adequate funding for values surveys should be made available on an annual basis so that surveys can be conducted based on the most recent projections of each year's harvesting activities.

Recommendation # 4

That Corporate MNR provide values funding sufficient to meet the agency's responsibilities related to FMP planning requirements, and that funding also be provided on an annual basis sufficient to collect information for the entire year's allocations.

Watershed Thermal Regime Estimation

It is important to know the thermal characteristics of streams and other waterbodies when planning forest management activities. Waterbodies which harbour coldwater species (such as trout) are generally considered more susceptible to disturbance than are those which are used by cool-and warmwater species. Opportunities for conducting harvesting operations on areas abutting coldwater bodies are more restricted, and the periods when in-stream work can take place (i.e. when crossings can be constructed) are different for coldwater and warmwater streams. For streams whose thermal characteristics are unknown, a precautionary principle is used which ensures a maximum level of protection in case sensitive species occur in the stream. The precautionary principle is used in this manner throughout managed Crown forests in all of Ontario.

As is the case for many other SFLs in Ontario, the thermal regime of a high proportion of streams on the ShiningTree Forest is not known. In order to make the most appropriate management decisions for forest operations potentially impacting streams, TFAI led the development of a thermal regime estimation procedure, with collaborative effort from MNR Kirkland Lake staff. The objectives of the process are to capture the available information to characterize stream thermal regimes, and therefore to facilitate making the best practical management decisions. For all 102 identified watersheds on the Forest, thermal information from the MNR's NRVIS system was integrated with data and assumptions used in previous FMPs, and anecdotal information from other reliable

sources. This allowed the characterization of thermal regimes on a watershed basis. In instances where information indicated that part of a watershed was coolwater and part was coldwater, sub-watersheds were recognized in order to take full advantage of the information available. Developing the process took considerable effort on the part of TFAI staff. MNR Gogama Area staff have reviewed the results and expressed reluctance to embrace the approach. They point out that watersheds within the Forest are complex in the nature of their thermal regimes and that often cold-and coolwater systems are found in unpredictable juxtaposition and that the system developed may be prone to oversimplifying watersheds and missing sensitive streams. MNR Gogama staff note that errors which they identified in the system were not considered, explaining their reluctance to embrace the approach. MNR Gogama staff advocated that more rigorously collected data are needed to make definitive decisions regarding the watersheds' and streams' thermal characteristics. It is most certainly true that more definitive data would provide for more complete characterization. However, in the face of MNR's declining budgets for values collection, and its corporate inability to meet its mandate for values collection, it seems impractical to believe that rigorously collected data on thermal information will be available for most waterbodies in the ShiningTree Forest in the near future. The Audit Team sees considerable value in the approach led by TFAI. The manner in which it approaches management of risk for work in or near to streams is somewhat more practical than the risk-management approach of universal application of the precautionary principle. However, we believe it is important for MNR staff to have a complete opportunity to appraise the approach and identify any reservations in a structured manner. Such an appraisal could provide the basis for continued development of the system. Therefore, Recommendation # 5 is made.

Recommendation # 5

That, by Sept. 1, 2007 MNR (Timmins District) evaluate the Thermal Regime Estimation Process developed by TFAI and identify circumstances in which it could be improved.

Interpolated Watershed Calculation Process

TFAI has developed a refined management aid to help plan watercrossings on the ShiningTree and Timiskaming Forests. The system integrates digital terrain data with spatial information on drainage networks. From these data the system is capable of characterizing upstream watersheds from any point in the Forest and can estimate watercrossing structure requirements based on MNR's culvert-sizing direction for any potential road-crossing on the Forest. There were two impetuses for developing the system. First, was a recognition that incomplete information on watercourses was the cause of considerable planning difficulties. This was identified by the recent (2004) Independent Forest Audit of the Timiskaming Forest: "*Our interviews indicate that AOC amendments on the Timiskaming Forest are primarily due to inappropriately identified watercourses and the difficulty in assigning the appropriate water crossing from maps and "best guesses" made during low water periods. The hilly topography and combination of sand, gravel and rock on the Timiskaming Forest creates fast runoff. This causes difficulty in determining the status of streams and creeks…*".

The second impetus relates to the requirements of the recently-completed Protocol for

the Review of Water Crossings[9]. The Protocol was developed in response to Condition 25(b) of the recent (2003) review of the implementation of the Terms and Conditions of the 1994 Timber Class EA (referred to as the Declaration Order). The Condition required that "*To assist in approving annual work schedules, MNR, in consultation with the Forest Industry and other government agencies, shall develop a proposal for efficiently conducting reviews of water crossings, as required under the federal Fisheries Act.*"

The intent of the Protocol is to ensure that fish habitat is appropriately considered during the planning and construction of water crossings. Key components of the Protocol are related to identifying and minimizing the risk that water crossings will result in damage to fish habitat. In order to provide adequate lead time for the assessment of proposed water crossings and the identification and amelioration/management of medium- and high-risk crossings, the Protocol, and the 2004 FMPM require that the planning of water crossings for two years in advance must be provided in annual work schedules. Regional MNR staff noted that adequate time must be provided for biologists to review and undertake risk evaluations so that certainty can be provided that the requirements of the Fisheries Act are being accommodated.

With the development of the Protocol and the concomitant requirements of the 2004 FMPM, TFAI staff realized that considerable benefit could be obtained through the development of a planning system to assist in watershed identification, watercrossing calculations and in streamlining the risk evaluation process identified by the Protocol. The Audit Team was very impressed by the system developed by TFAI. MNR Gogama staff identified that the automated system makes errors in some of its computations, due largely to incomplete or inaccurate spatial information upon which the calculations are based. (The data used in the system are based on the most recent available information provided by MNR and the Federal government.) MNR District staff in Kirkland Lake (who are exposed to the system by virtue of that District's management responsibilities for the Timiskaming Forest) informed the Audit Team that they found the system to be robust and useful in achieving its objectives; staff in Gogama remain to be convinced of its utility because of the rate of errors in its calculations. Although the system is very useful, there remains a role for both MNR and TFAI in reviewing its calculations as it is being applied.

The Audit Team finds the efforts of TFAI in attempting to thoughtfully and expeditiously meet the management requirements related to waterbodies by developing a watershed thermal regime estimation approach and interpolated watershed calculations to be very thoughtful and innovative.

Best Practice #1

TFAI's efforts in estimating watershed thermal regimes and in development of the interpolated watershed calculation approach show ingenuity and innovation and should lead to a more efficient execution of those aspects of forest management intended to protect aquatic resources.

[9] Ontario Ministry of Natural Resources. 2005. Protocol for the Review of Water Crossings Proposed Through the Forest Management Planning Process. OMNR April 2005.

Elk

MNR staff informed the Audit Team that elk have recently been found in the southern portion of the Forest. Elk were reintroduced into several locations in central Ontario over the last few years and some individuals have apparently found their way to the ShiningTree Forest, having found suitable conditions there. They are apparently attracted by the outcropping of rock knobs interspersed with mixed forest. The Audit Team viewed areas of elk habitat during the site inspection. The addition of elk to the forest will increase the appeal of the area for non-forest users and underscores the importance of managing the forest for non-timber values. The MNR is employing guidelines originally developed for the protection of moose habitat to also provide consideration for elk habitat.

Access Roads

The planning activities for access roads, including assessment of alternatives, mitigation measures, and AOC planning, met, or as described above, exceeded the requirements of the FMPM. The road planning documentation was complete and of good quality.

3.3.8 Plan Review and Approval

The 2001 FMP was prepared according to the 1996 FMPM and spanned the April 1, 2001 to March 31, 2006 audit period. The development and analysis of that FMP has already been reviewed during the 2001 IFA.

As noted earlier, the process of developing the 2006 FMP will be covered in the 2009 IFA of the Timiskaming Forest, and is not within the scope of this audit.

3.3.9 Plan Amendments and AWS Revisions

MNR and TFAI record all amendments to the 2001-06 FMP in an amendment binder. A ledger kept at the front of the binder provides a summary of all consecutively numbered amendments. All AWS revisions were tracked separately with an AWS revision ledger and are kept in an Appendix to the AWS. Overall the amendments and AWS revisions were very well organized and documented, and were logically classified.

Table 4 provides a summary of the 39 FMP amendments and 96 AWS revisions that occurred during the audit period and FMP term. Table 5 and Table 6 provide summaries of the reasons for the amendments and AWS revisions respectively. Of the 39 amendments, none were categorised as major, there was one minor, and 38 administrative. There were 96 AWS revisions, three of which were dropped at the request of the management contractor.

Table 4. Summary of FMP amendments and AWS revisions for the 2001-06 period.

FMP	AWS Year	Total # Amend.	Major	Minor	Admin	Amend Dropped*	AWS Rev	Revision Dropped*
2001-02	2001-02	8	0	0	8	0	18	1
2002-03	2002-03	8	0	1	7	0	30	0
2003-04	2003-04	17	0	0	17	0	26	1
2004-05	2004-05	3	0	0	3	1	13	0
2005-06	2005-06	3	0	0	3	0	9	1
	Totals	**39**	**0**	**1**	**38**	**1**	**96**	**3**

* These amendments/revisions became unnecessary before they could be approved.

Table 5. Summary of reasons for amendments during the 2001-06 period.

Type of Amendment	No. of Instances	Type
Add/correct stick nest	5	Values
Revise/drop high priority cultural heritage designation	9	Values
Add/correct First Nations value	2	Values
Add/correct Permanent Sample Plot	1	Values
Add/change/remove stream and water crossing	6	Values
Add/change AOC prescription	3	Values
Move road corridor or water crossing	3	Roads
Planning	3	Planning
Harvest (add Bw surplus blocks, & 1 other block)	5	Harvesting
Add Silvicultural Ground Rule	1	Renewal
Renewal Support	1	Renewal
Total	39	

Table 6. Summary of reasons for AWS revisions during the 2001-06 period.

Reason	Total	Class	2001-02	2002-03	2003-04	2004-05	2005-06
Tertiary Rds	28	roads	2	8	8	5	5
Water Crossings	18	roads	4	4	6	2	2
AOC/Value Revision	17	value	4	6	6	1	
Harvest	14	harvest	3	7	3	1	
Site Prep	6	renewal	2	2	1	1	
Slash Pile Burn	4	renewal	1	1	1	1	
Plant/Seed	3	renewal		1		2	
Roads/ Pits	2	roads	2				
Thinning	2	renewal					2
Road Maint/Crossing	1	roads		1			
Renewal Support	1	renewal			1		
Total Approved	**96**		**18**	**30**	**26**	**13**	**9**
# dropped	**3**		**1**	**0**	**1**	**0**	**1**

The fact that almost all amendments were classed as administrative reflects that good efforts were undertaken by the SFL holder and MNR to develop a well-planned FMP, and to keep the FMPs and AWSs up to date. Table 5 shows reasons associated with the amendments and Table 6 shows reasons for the AWS revisions over the audit term.

The changes which were required were based mostly on revised operational needs for tertiary roads, water crossings, additions for silviculture, slight changes to harvesting, and AOC additions and deletions. In general, the Audit Team finds that the number and types of amendments and revisions were consistent with the scale of operations on the forest and the issues which are commonly encountered during forest management planning and operations.

One aspect that concerned the auditors was the relatively large number of AOC- and values-related revisions and amendments. A total of 17 of 96 AWS revisions and 21 of 39 amendments were related to values and AOC changes. (We note that the annual decrease in the number of amendments in the last two years of the audit period is likely due to a change in planning requirements which came into effect in 2004/05 which no longer required the addition of new values to be treated through amendments.) Section 3.3.7 of this report discusses issues related to the quality of values information on the forest and recommendations related to values collection and verification are made there.

We note that nine amendments were related to 22 high potential cultural heritage values requiring Stage Two assessments. A total of 17 high potential cultural heritage values did not require any AOC prescription changes after the Stage Two assessments were completed. There were 5 high potential cultural heritage values that became known values and had new AOC prescriptions applied as a result of the Stage Two assessments. The Stage Two assessments allowed the SFL holder to operate in the non-frost period in the high potential cultural heritage AOCs, but they were implemented at considerable cost to the SFL holder.

As described in Sections 3.3.7 and 3.4.2, there were several amendments and AWS revisions to bring 19 white birch harvest blocks into the plan. When white birch markets developed the Company requested the amendments or AWS revisions to change the blocks from surplus to regular allocations.

The review and approval timelines were 92 days for the one minor amendment, and an average of 44 days for the administrative amendments. A total of 22 of the administrative amendments took 30 days or less to approve, while the remainder took longer. The 2004 FMPM notes that "the decision on amendment requests, and the appropriate category of amendment, will normally be made within 15 days of receipt of the request." (The 1996 FMPM provides comparable direction). The MNR noted that the review and approval timelines were affected for some amendments due to incomplete amendment packages being submitted by the SFL-holder, and for some others due to the time required to provide for the necessary aboriginal consultation. However, the Audit Team notes that for amendments not affected by these reasons, there is still room for improvement in the MNR's turnaround times for amendment requests; this is addressed in Recommendation # 6.

Recommendation # 6

That the MNR provide a decision regarding complete amendment requests within 15 days, as identified in the FMPM. In addition, MNR should track the amount of time necessary to accommodate incomplete amendment requests and the need to incorporate aboriginal consultation into amendment decisions.

3.3.10 Contingency Plans

There were no contingency plans during the audit period.

3.3.11 Annual Work Schedules

There were five Annual Work Schedules (AWSs) prepared and implemented during the audit term. The 2001-02, 2002-03, 2003-04, and 2004-05 AWSs met the requirements of the 1996 FMPM, while the 2005-06 AWS was the first prepared under the new 2004 FMPM requirements, which it met. According to the both the 1996 and 2004 FMPMs, the deadline for submitting a draft AWS is December 31 each year. This is followed by a 30 day MNR review period, and final approval is required by March 15 to allow 15 days for the public to inspect the approved AWS prior to operations commencing on April 1st. The MNR and SFL holder did not always clearly record dates of AWS submission, review, and approval, leading to difficulties in determining whether the required timelines were met in some instances. We have attempted to interpret dates based upon the sometimes-limited information available.

All five AWSs were submitted on or about the December 31 due date and approved for implementation starting on April 1. The 2001-02 AWS was not submitted until January 5, 2001 and correct maps for the 2003-04 AWS were not submitted until early January 2003, but these transgressions are not serious. The MNR reviews were very detailed and took between 32 and 67 days to complete based on the dates on the final required alteration lists and the Company draft submission dates. The length of time required for the MNR reviews is recorded differently when MNR data (MNR draft receipt dates and MNR reported review completion dates) are used. Those data suggest that the MNR reviews took between 25 and 51 days. The Company provided final AWS submissions in late February (according to the SFL cover letters) or early March (based on the MNR receipt date). All AWSs were approved on or prior to the March 15 deadline for approval.

Both the 1996 and 2004 FMPMs note that the MNR is obligated to undertake a review of submitted AWSs over a period of 30 days. No matter which data are used (i.e. Company or MNR), it is apparent that the MNR's review times exceeded that identified by the FMPM on several occasions. In these situations, the Company has less time than anticipated by the prescribed planning process to respond to MNR comments and have the AWS approved in time for operations to proceed uninterrupted.

Recommendation # 7

That MNR complete its review of Annual Work Schedules within the 30 day period identified by the FMPM.

Both Domtar and TFAI generally provided well written and comprehensive AWSs, which included all of the required elements. Some of the MNR reviews indicated that a few AWS submissions were incomplete or missing some required elements (e.g. 2003-04 AWS maps). MNR's thorough review of the AWSs typically resulted in operationally-based revisions to planned roads and harvesting prescriptions or revisions to values and AOC prescriptions. Almost all AWSs during the audit period had a few conditions listed in the approval letter that reflected changes to the AWS or missing items that still needed to be addressed after approval. As discussed earlier, the auditors noted that

there were numerous values/AOC related alterations required to the AWSs as a result of MNR's review.

The new Forest Operations Prescription (FOP) requirements of the 2004 FMPM were to be phased in as of June 2004, so the new FOPs were applied to the entire 2005-06 AWS. Beginning with the 2005-06 AWS all required water crossings were expected to be planned two years in advance. The auditors noted that crossings were only identified for the 2005-06 period and not for 2006-07. This was because allocations for the 2006-07 year were not provisionally identified until the 2006 FMP was completed. We note that with the completion of the FMP, the Company has planned all its watercrossings for the next five-year period. Therefore, we do not believe that the failure of the Company to provide 2006-07 watercrossings in the 2005-06 AWS is indicative of a shortcoming in the Company's planning abilities.

3.4 Plan Implementation

3.4.1 Areas of Concern

The Audit Team inspected many AOCs in the field, and found good adherence to the prescribed means of values protection. Compliance records do not indicate any serious issues with AOC trespasses. Although issues exist with ensuring that values information is current (see section 3.3.7), no systemic operational issues were apparent.

3.4.2 Harvest

A wide range of harvest areas were examined in the field by truck and helicopter. In general, harvesting practices were good. Utilization was good, snag management was appropriate and no damage to residual trees was observed, including in jack pine spacing blocks.

The exception to this generally favourable impression was observed at one of the very few tolerant hardwood stands in the forest which was harvested in the audit term (Figure 4). Although the stand was of poor quality prior to harvest and was managed according to the SGRs, virtually no high quality stems were left for future harvest. This appears to the Audit Team to be a case of not capturing an opportunity to improve stand quality and of perpetuating a poor stand condition.

The stand was typical of the tolerant hardwoods on the Forest - most are of poor quality due in part to previous management practices, but largely because the Forest is at the northern edge of tolerant hardwoods' range. Less than 3% of the Forest's area is in tolerant hardwood working groups and the harvesting which does takes place is often not profitable given the quality of the trees. Given this situation, the Audit Team questions the value of attempting to manage (through harvesting) all the tolerant hardwoods in the Forest. In addition, because the trees are at the edge of their range, they may provide habitat for wildlife species also at the edge of their range and therefore be of disproportionate ecological value. The audit team believes that among the range of management options considered for these sites, a no-intervention option should be considered. The audit team is not advocating a universal hands-off approach for the Forest's tolerant hardwoods, but in circumstances where the economics of intervention are poor, we believe it is reasonable to consider no harvesting as a management

alternative.

Suggestion # 1

TFAI should consider no harvesting as a management option for tolerant hardwood stands on a case-by-case basis.

Figure 4. Harvest Block Browning 308 following shelterwood harvest. Note the poor quality of most of the remaining trees.

The operator who worked in Block 308 established a camp near the site without a Crown Land Use Permit. The camp, which consisted primarily of two trailers, has been abandoned and at the time of the audit site visit had fallen into disrepair, with one of the two trailers literally falling down. The site was a safety hazard and a blight on the local area. The MNR did not adequately enforce permitting of the site, and the Audit Team believes it is MNR's responsibility to manage the situation. The Audit Team has been informed that, since the time of the site visit, the MNR has initiated steps to resolve the circumstances, having entered into discussions with another party to dispose of the one trailer and authorize the occupation of Crown land there. As it seems the situation is not yet completely resolved, the Audit Team believes a recommendation is appropriate.

Recommendation # 8

That MNR ensure that the operator's camp at Block 308 is either removed or rehabilitated and appropriately authorized.

Site Damage

The Audit Team observed several instances of rutting, which were notable because they were on recent cutovers (2004 and 2005) and because the Company operated on only a very few lowland and other sensitive sites. Site damage was also noted as a non-compliance incident in 2004-2005. The Company is planning to harvest a greater number of sensitive sites during the 2006 FMP period, and the Audit Team feels that while the appropriate training has been given, and the compliance guidelines are well done, the relative lack of experience on the part of operators on these types of sites means that a heightened level of care and vigilance will be required.

Recommendation # 9

That the Company take measures to ensure that operators on sensitive sites avoid site damage.

Slash Management

The Audit Team's assessment of slash management on the Forest was undertaken considering the context of the 2001 IFA which contained a recommendation to improve slash pile management and reduce the amount of productive land lost due to deep accumulations of slash.

Most harvesting on the unit during the current audit period used the tree-length system, which involves roadside topping and delimbing. The majority of the slash pile management conducted during the audit period consisted of piling and burning, which in itself is an improvement over what was seen during the previous IFA. However, the Audit Team observed a meaningful number of sites where slash had been piled and not burned, or where attempts to burn the slash were not successful.

The date that slash pile burning is permitted to commence can be controversial. Slash pile burning may commence on October 1, but the moose hunt often runs into the second or third week of October, and there is often a desire by hunters to have burning begin only after the hunt is completed. On the other hand, a later date means a shorter window for burning, especially in years that have wet falls or early snow. Domtar was reported to have promised GACC that it would wait until after the moose hunt to burn, and TFIA adhered to that for the duration of the 2001 FMP. Post-burn reports indicated that burning was conducted between October 24 and November 26 in 2003, October 22 to November 20 in 2004, and October 21 to December 21 in 2005. Burn success rates were estimated at 75% in 2003 and a 90% success rate was achieved in 2005; despite these high rates of success, a significant number of slash piles were evident during the Audit Team's site inspection. The auditors were not able to reconcile the difference between the high success rates and the remnant slash piles, but observe that the assessment of a successful burn is judgmental.

The auditors note that in 2006, the Company began slash pile burning at the beginning of October. Company staff indicated that they avoided burning blocks where hunters were active, but GACC was not supportive of the earlier burning.

Throughout the audit term, the Company has improved its performance and broadened

its efforts to manage slash. On some sites, operators have moved slash back into the cutover, and Gogama Forest Products, a major operator on the forest, has recently adopted the cut-to-length harvest system on all of its operations, which eliminates roadside slash. Company contracts for slash pile burning now require the contractor to revisit areas and re-ignite piles where burning success was low. As noted in Table 14, the Audit Team concludes that the Company has fulfilled the requirements of the recommendation of the previous audit dealing with slash management and the Audit Team anticipates that there will be continued improvement.

The auditors agree that the narrow window for slash pile burning presents a considerable challenge, especially for hardwood slash. Because there is a substantial amount of experience with slash pile burning, it would seem to be prudent to allow slash pile burning to take place before October 1 when conditions were appropriate. Burn crews are required to seek permission from regional MNR fire staff to burn each day, regardless of conditions, and such an approach provides insurance against mishaps and escaped fires. Although the concerns of the GACC regarding slash burning remain, the audit team believes that with the Company avoiding burning where hunters are active, it is appropriate to consider earlier burning of slash than has been practice in recent years.

Suggestion # 2

MNR should consider allowing TFAI to conduct slash pile burning in the fall prior to October 1, when conditions are favourable.

Snags and Residuals

The targets for retention of snags and residuals in the 2001 FMP were guided by the direction of the marten guide[10], and in some respects exceeded the requirements of the guide. Field inspection of sites harvested during the audit period showed that the targets identified in the FMP were attained, however in many areas windthrow had felled many trees. Comparable targets in the new (2006) FMP are based on the natural disturbance pattern emulation guide [11] which requires that more snags, residuals and internal patches be maintained.

[10] Watt, W.R., J.A. Baker, D.M. Hogg, J.G. McNicol, and B.J. Naylor 1996. Forest Management Guidelines for the Provision of Marten Habitat. Version 1.0 Ontario Ministry of Natural Resources. Queen's Printer For Ontario.

[11] Ontario Ministry of Natural Resources. 2001. Forest Management Guide for Natural Disturbance Pattern Emulation. Queen's Printer for Ontario.

Figure 5. Recent harvest block which has been planted. Note the sparse snags and residuals as many have fallen due to windthrow. Note also the good condition of the planted trees. (Londonderry Block 244)

Planned vs. Actual Harvests

The proportion of the planned harvest area that is actually harvested tends to be relatively high on this forest. In the 1996-2001 period, 85% of the planned harvest area was cut. At the time of the site visit, annual reports had been prepared for the first four years of the audit period, and draft figures were provided by the Company for 2005-06. During the 2001-06 plan period, and after accounting for the surplus area that was amended back into the allocated area, 74% of the planned harvest area was harvested. By-pass was running at about 10% of planned area.

Estimates of harvest volume have consistently been inaccurate on the Forest. Figure 6 shows, for the four previous plan periods, the proportion of the planned harvest area that was actually cut, and the proportion of the planned harvest volume actually obtained. (The planned harvest areas and volumes in the 2001 FMP period were adjusted to account for the amendments that restored most of the surplus area to the planned harvest.) The figure shows that for three of the four plan periods, volumes were overestimated. The estimates are improving; in the 1986-1991 plan period, it appears that the actual harvest volumes were three times the planned levels. During the current plan period, 74% of the planned area was harvested, yielding 82% of the planned volume.

The Trend Analysis (Appendix A) provides a very good discussion of the planned versus actual harvest area and volume, including a more comprehensive review of factors that affected the outcome than is provided in this section.

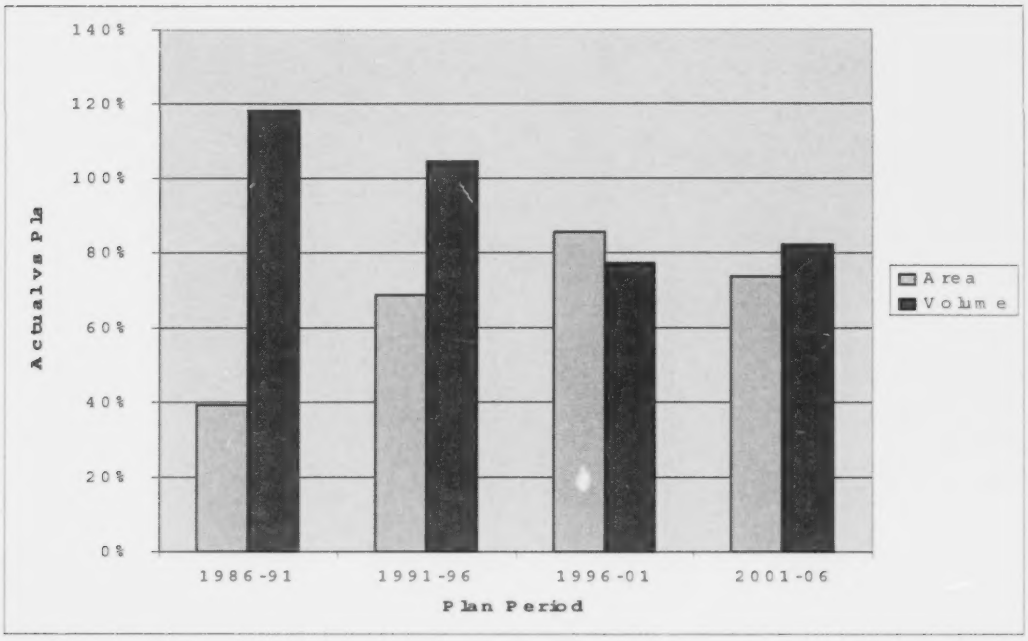


Figure 6. Actual Harvest as a Proportion of Planned, for Area and Volume, over the Past Four Plan Periods on the ShiningTree Forest.

The relative parity of the proportions of planned harvest area and volume that were actually harvested in the 2001 FMP period masked some significant species-specific discrepancies. By the end of year 3 of the 2001 plan period (2003-04), the entire planned jack pine harvest volume had been achieved. Over the entire plan period, the actual jack pine harvest volume was 133% of planned; given that the 92% of the planned harvest area in the jack pine forest unit (PJ1) was actually harvested, the overestimate was approximately 45%. This can be seen from Table 7 which shows the percentage of the planned jack pine harvest volume that had actually been cut in the 2001-06 FMP period, and the analogous calculation for harvest area. The annual reports attributed the relatively higher volumes to site class underestimation in the FRI and an underestimate of conifer harvest yields from mixedwood stands. The Trend Analysis reports that jack pine volumes have been underestimated on the forest for some time; the error is attributed to underestimation of stocking and jack pine presence in the FRI.

Black spruce volumes also appear to have been underestimated, according to Table 7. Historical data provided in the Trend Analysis is difficult to interpret because of the sometime inclusion of white spruce in the estimates and actual results.

Table 7. Comparison of proportion of actual vs planned harvest volume and area, prorated over five years.

Species	Volume	Area	Main FU
Jack Pine	132.6%	92.1%	PJ1
Black Spruce	106.2%	42.6%	SB1
Poplar	73.8%	86.3%	PO1
White Birch	32.0%	73.8%	BW1

(Source: Annual Reports)

On the other hand, the Trend Analysis also reports that poplar and white birch harvest volumes have been consistently overestimated. This is attributed to the overestimation of stocking and hardwood presence in the FRI.

Table 7 shows that 86% of the planned poplar area was harvested but 74% of the planned volume was obtained. The difference is greater in white birch; harvesting has covered 74% of the planned area and yielded 32% of the planned volume. Difficulty in estimating volume in mixedwood stands may also be a contributing factor to the hardwood volume underestimates. The SFMM analysis in the 2001 FMP used mixedwood yield curves that had been adjusted based on ShiningTree data, however the planned volumes from individual stands were not adjusted and therefore were suspected of being less accurate.

In the 2006 Timiskaming FMP, TFAI made some adjustments to yield curves but the amalgamation limited the Company's options for correcting yield curves, since the yields in the plan applied across the entire new Timiskaming Forest. The yield estimates on the former Timiskaming Forest were, according to the Trend Analysis, quite accurate, and it remains to be seen how well the actual harvest volumes correspond to the planned levels. The new FRI for the ShiningTree portion of the Forest, which is anticipated within five years, is expected to improve the ability of planners to estimate harvest volumes. In this situation, the Audit Team did not feel that a recommendation was warranted.

There were no salvage harvest operations conducted during the audit period.

The number of non-compliances associated with harvesting declined from 10 reported in 2001-02 to 3 the following year, and to 1 in 2003-04. There were two harvest related non-compliance incidents in 2004-05 due to site disturbance (rutting) and an inadequate AOC buffer width. The Audit Team found no concerning trends in the harvest non-compliances and concludes that, consistent with observations from the site visits, that harvest operations are being conducted well.

3.4.3 Renewal

Overall, for the sites that were observed in the field during the audit, the silvicultural treatments were consistent with the silvicultural ground rules and forest operational prescriptions. The boundaries and coverage of site preparation, planting, and tending projects were good. The areas were well-matched to the areas mapped and reported in the ARs. The treatments were well-matched to actual site conditions and appeared to be effective in meeting the silvicultural objectives. Domtar and TFAI have met or exceeded

all the 2001 FMP objectives and targets related to silviculture, with the exception of natural regeneration.

Silvicultural Achievements

Table 8 compares the forecast targets for renewal activities (natural and artificial regeneration, site preparation, and tending) with the actual achievements for the 2001-2006 planning term for the ShiningTree Forest. Since the actual harvest area achieved was only 73.8% of planned, the regeneration and site preparation forecasts in the FMP were pro-rated, proportional to the harvest levels, to calculate the percentage values for achievements in the FMP term. Amendments implemented during the FMP period were included in the values used in Table 8. Pre-commercial thinning activities are not conducted on recent harvest areas, thus were not pro-rated. Likewise, cleaning activities were not pro-rated since a significant proportion of these activities may be conducted on areas from previous FMP terms (e.g., areas surveyed for free-to-grow status during the FMP term that require follow-up treatments to achieve silvicultural standards).

The pro-rating of management accomplishments relative to harvest, while variously helpful depending on the precise activity being considered, is generally useful for identifying trends and flagging possible issues.

Table 8. Planned vs. actual silvicultural accomplishments for the 2001-2006 FMP period

Activities	FMP Forecast (incl. Amendments)	Pro-rated Forecasts for Regeneration and Site Preparation *	Actual area (ha)	Percent of (Pro-rated) Forecast
Natural Regeneration	10,245	7,561	3,473	46%
Artificial Regeneration				
Planting	4,403	3,249	5,100	157%
Seeding with site preparation	1,984	1,464	1,416	97%
Total Artificial	6,387	4,714	6,516	138%
Total Regeneration	16,632	12,274	10,114	**82%**
Site Preparation				
Mechanical	5,978	4,412	5,907	134%
Chemical	473	349	1,671	479%
Total Site Preparation	6,451	4,761	7,620	**160%**
Tending				
chemical - ground	473	473	0	0%
chemical - aerial	5,109	5,109	7,018	137%
Pre-commercial thinning	1,020	1,020	1,267	124%
Total Tending	6,602	6,602	8,285	**125%**

* forecasts for tending activities were not pro-rated.

Natural Regeneration

Natural regeneration targets were not achieved, with 46% of the natural regeneration completed compared to the pro-rated forecast levels. Compared to the original forecast

in Table FMP-25, the level of natural regeneration achieved was 34% of the planned area of 10,245 ha. The very low level of achievement of natural regeneration raises concerns, especially since the forest units which would be expected to be most conducive to natural regeneration treatments, such as PO1 and BW1, were harvested at levels that were at or above the average harvest level for the period of 74%. Consequently, we had some concerns that the planned natural regeneration area associated with the 2001 FMP, which was significantly under-achieved for the FMP period, was too high given the site conditions on the forest. However, two factors mitigate this concern:

1. In the 2001 FMP, natural regeneration represented 62% of the planned renewal program, while in the 2006 FMP for the Timiskaming Forest, natural regeneration accounts for 43% of the total planned renewal program, which is more consistent with the levels achieved for the ShiningTree Forest during the 2001 FMP term.

2. The 2006 FMP contains SGRs that include a delay period, during which the ingress of natural regeneration is monitored, and areas that do not meet silvicultural standards are then scheduled for fill planting, or other treatment, as required by the site conditions.

Most of the natural regeneration implemented on the ShiningTree Forest is for hardwoods (trembling aspen and white birch). A small proportion of the ShiningTree Forest consists of lowland black spruce, cedar and larch sites that are also capable of being regenerated naturally. The hardwood natural regeneration areas that we observed in the field appeared to be uniformly successful. We assessed two white cedar sites that had been harvested and left for natural regeneration. SGRs for the natural regeneration of cedar call for sufficient seed trees to be left during the harvest operation to provide an adequate seed source. On the first site, which was harvested in 2004, few seed trees had been left and the ground had been significantly rutted during the harvest operation. The second site, harvested in 2005, showed considerable improvement, with sufficient numbers of residual cedar trees left in between the logging corridors to support natural regeneration, and little rutting. The Company explained that since there are few lowland cedar areas on the forest, the operators were undergoing a learning curve as they encountered some of these sites in the latter years of the 2001 FMP term. Since the Company expects to encounter more lowland areas, including black spruce as well as cedar, in the next 5-year period, we offer the following recommendation.

Recommendation # 10

That TFAI conduct additional supervision of harvesting operations conducted on lowland sites during the 2006-2011 FMP period, and if necessary take steps to ensure that training of operators is adequate to ensure proper implementation of SGR requirements for natural regeneration of these areas.

Artificial Regeneration

The forecast artificial regeneration program for the 2001 FMP was exceeded during the audit period, with 157% of the tree planting, and 97% of the seeding, for a combined total of 138% of the planned artificial regeneration.

Tree Planting

Species choices for tree planting were generally well-matched to the observed site conditions. Domtar and TFAI have done a good job of directing species within planting projects to site-specific terrain. During the audit period the Company planted over 10 million trees on the ShiningTree Forest (Table 9). The relative proportions of jack pine, black spruce, and white spruce are appropriate for the forest units on the harvested area and are consistent with FMP objectives. Specific area targets for black spruce, red pine and white pine in the 2001 FMP period were exceeded by the Company.

Table 9. Trees planted on the ShiningTree Forest during the audit period (2001-2006).

Number of Trees Planted (000s)				
Species	**Forecast # trees to be planted (000s)**	**Actual # trees planted (000s)**	**2001 FMP area objectives (ha)**	**Estimated area (ha)**
Pj	5,000	8,179	na	
Pw	200	204	92	157
Pr	88	197	85	109
Sb	1,200	1,493	465	746
Sw	640	992	na	
Total	7,128	11,065	642	1012

Figure 7. Excellent recent growth on planted white pine, Garabaldi Block 281.

Seeding

Generally, the jack pine seeding treatments we observed in the field were of excellent quality. Density and survival of the seeded stock was acceptable in all cases. Some areas with higher density may require pre-commercial thinning in the future. . During the 1996 to 2001 period, Domtar conducted some seeding operations in late May, to avoid the spring drought period. The 2001 IFA report suggested that seeding might be more successful if conducted earlier in the year, so that germination would occur immediately following snow melt. TFAI has followed this suggestion by conducting all of their seeding operations in April prior to snowmelt.

Total Regeneration

Total regeneration for the 2001 FMP term was 82% of forecast levels, indicating a shortfall in renewal activities that should be carried forward into the next FMP period. This has been done by TFAI: areas that were scheduled for renewal in the 2001FMP, but which have not yet been reported on, have been carried forward into the 2006 FMP for the Timiskaming Forest as areas eligible for silvicultural activities (i.e., the forecast area for total regeneration exceeds the forecast harvest area by 3,132 ha).

Site Preparation

The choices of site preparation treatments we observed in the field were appropriate for the site conditions, and the coverage and quality of the treatments was good. During the audit period, most of the site preparation was conducted with powered trencher implements, as well as dozer-mounted blades.

The area site prepared was greater than that planted and seeded by 1,104 ha (see Table 8). In 2002, Domtar conducted a larger-than-usual amount of mechanical site preparation (1,686 ha). Unfortunately, stock production for that year and the following year was insufficient to plant all of the site prepared ground. As a result, some of the remaining areas (i.e. those which were highly competitive) had to be chemically site prepared to hold the areas over until planting stock became available. Approximately 1,000 ha of site prepared ground remains to be regenerated and has been carried forward into the 2006-2011 FMP period.

Public Response Regarding Herbicide Application

As part of the IFA, a questionnaire is sent to a sample of those individuals on the MNR's FMP mailing list (See Appendix E for more details). In the responses a variety of interests were expressed, as they usually are in such surveys. However, the responses to this mail-out contained a higher-than-usual proportion indicating concern over the use of herbicides on the Forest. The concerns were not so much regarding the use of herbicides *per se*, but the effect of herbicides on herbaceous foods for animals (primarily moose). The Audit Team does not have comparable concerns, or concerns that the use of herbicides was inappropriate given the management objectives for the Forest. The survey is not conducted in a scientifically rigorous manner so we cannot conclude that the results are definitively representative of the public in general. Nonetheless, the fact that a strong proportion of respondents expressed this concern is noteworthy. TFAI and MNR staff use several means of communicating management objectives and techniques to the public and have addressed this specific concern with individuals who have raised

the issue with them. It seems however that the concern still exists and so we suggest that TFAI and MNR continue to be attuned to the topic and continue with their efforts to communicate the goals and effects of its program with the public.

Suggestion # 3

The Company and MNR should continue their efforts in communicating the goals and effects of herbicide use with the public.

3.4.4 Tending and Protection

The tending projects observed by the Audit Team in the field had good boundary control and coverage. In general the effectiveness of the tending treatments was good. Appropriate sites had been selected for tending treatments. Tending plans for herbicide applications had been prepared by the Company as per the regulatory requirements. All herbicide applications conducted during the audit period were conducted using helicopters.

The Company conducts both pre- and post-tending assessments, and re-treats areas where the surveys show this to be necessary. All plantations are surveyed one year following establishment to determine possible tending treatments. Areas that will require tending are identified on supplementary air photography, which is acquired annually, normally one to two months prior to when the treatments will be conducted. These pre-treatment assessments focus the use of herbicides by identifying areas within the blocks allocated for tending that do not require treatment. Maps showing the tending and no tending strata are provided to the aerial spray contractors for each treatment block. Follow-up tending treatments may also be identified during free-to-grow surveys, if required. Areas requiring treatment are tracked in TFAI's GIS system and are scheduled for survey to stratify the blocks, as described above, and the appropriate prescribed treatments.

No treatments for the control of insect pests were conducted during the audit period.

3.4.5 Renewal Support

Cone collection conducted on the Forest is summarized in Table 10. The Company has a good program for the collection and processing of cones and seeds, and presently maintains an adequate seed stock to support its artificial regeneration program through the next 5-year period (April 1, 2006-March 31, 2011), with the exception of red pine and white pine. Seed stock of these species will need to be replenished during the current FMP term. The Company is aware of this situation and intends to replenish seed stock for these species as soon as a reasonable seed crop is available. At March 31, 2006, the Company had a seed stock of 81.3 million jack pine, 15 million white spruce, 18.1 million black spruce, 292,900 red pine, and 375,400 white pine seeds for the ShiningTree Forest

Table 10. Cone collection conducted on the ShiningTree Forest for the 4-year period from 2001/02 to 2004/05*, compared with FMP forecasts.

Species	Seed Zone/ Breeding Zone	Seed or Cones Collected (hl), for the 4-year period from 2001/02 to 2004/05	FMP Target	Percent
PJ	25-434-00	568.1	220	258.2%
PR	25-434-00	0	5	0.0%
PW	25-434-00	0	5	0.0%
SB	25-434-00	0	10	0.0%
SW	25-434-00	42	25	168.0%
Total		610.1	265	230.2%

*(at the time of the audit, information was not available for the year 2005/06)

The program for growing trees for planting is also adequate and the Company works with local growers to ensure consistent quality. No problems with planting stock were noted during the field assessments.

3.4.6 Access

The 2001 FMP indicates that 60 km of primary and secondary road were planned for construction in the audit period. The 2005/06 AR reported that 58.9 km of construction had taken place. Discussions with TFAI staff, and information provided in the 2006 Timiskaming FMP indicate that the planned construction activities for the next plan period are well considered and will support the development of the forest going forward.

During the site visit portion of the audit, the Audit Team travelled upon over 300 km of road and found the construction quality and apparent maintenance consistent with the road class and level of use.

Watercrossings inspected by the Audit Team were generally of good quality. Particularly of note was the excellent job done in installing several large culverts on the forest (Figure 8). However, the Audit Team noted a small number of instances in which smaller culverts of excessive length were used for cross drainage and for smaller creeks (Figure 9). MNR staff expressed a concern that small culverts can impede fish passage by increasing water velocities. Brook trout may be particularly vulnerable to this effect as they are more intolerant of high water velocities over short distances, and small streams can be important nursery grounds for brook trout. In addition, overly long culverts can be more prone to bowing (i.e. becoming raised at the ends), and therefore becoming ineffective in permitting water passage. The audit team believes that the use of too-long culverts was an exception to the Company's normally good practices, however as the concern was raised by the MNR independent of the audit team's own observations, we believe additional effort is required to ascertain whether or not an issue truly exists. Recommendation # 11 is intended to address this.

Figure 8. A well-installed large culvert. Note that the sides are appropriately sloped and make good use of rip-rap. Also note that the culvert is adequately seated below water-level.

Figure 9. A culvert of excessive length. Note that the culvert extends much too far beyond the edge of the water.

Recommendation # 11

That the Company and MNR review existing water crossings on the Forest and identify the extent to which inadequate culvert installations exist. Should the results warrant, the Company is to review its installation procedures to ensure that the means used to install culverts meets relevant standards.

3.4.7 Ministry/Industry Collaboration

As is discussed in several places throughout this report, the Audit Team had a generally favourable impression of the manner in which the Company and the MNR were managing the forest, implementing the 2001 FMP and carrying out the responsibilities associated with their mandates and positions. However, the Audit Team is concerned that the perspectives and information provided by Gogama MNR staff and TFAI staff were very different on many topics (e.g. values updating, the rapport of the company with outfitters, the quality of the company's automated systems). These different perceptions seem to be both a cause and a symptom of a strained rapport. The auditors are concerned that dealing with the strained relations may detract from the energies and resources that could be much better spent in managing the forest. Both the Company and MNR staff have the same objective – managing the forest wisely, and while we recognize that the responsibilities of MNR and the Company sometimes cause a natural tension between parties, the extent to which it occurs on the ShiningTree Forest is beyond that which could be considered healthy.

With the development of the Inter-district Memorandum of Understanding on the roles and responsibilities of MNR staff (discussed in Section 3.3), the role of the Kirkland Lake MNR will become more prominent given the amalgamation of the ShiningTree Forest into the Timiskaming Forest. However, Gogama Area staff will continue to play an important role in management of the ShiningTree area. We note that the rapport between the Kirkland Lake MNR and the Company is not burdened with the same degree of tension as is the dynamic involving the Gogama MNR. This may be because of the longer working relationship between the Kirkland Lake MNR and the Company and gives hope that as the two parties (Gogama MNR and TFAI) become more comfortable with each other, their rapport will improve. Nonetheless the Audit Team believes that the MNR and TFAI should engage in an explicit effort to improve their working relationship.

Recommendation # 12

That the MNR and the Company identify and address the impediments to a better working relationship.

3.5 SYSTEMS SUPPORT

3.5.1 Human Resources

Training

TFAI maintains excellent training records for each of its staff, as well as shareholders' staff, as part of its environmental management system. Operator training records are maintained by the individual shareholders. MNR training records are kept by each individual MNR staff member in a variety of formats.

Overall, staff are well trained and receive a combination of formal and informal field training. Annual forest operators meetings are held with all staff, shareholders and operators. Pertinent training is provided based on the annual priorities. Many members of the 2006 planning team and plan advisors attended the FMP training modules provided by MNR.

3.5.2 Documentation and Quality Control

The SFL holder has maintained good documentation of all aspects of forest management (but see the following section on submission and approval date record keeping). For example the AWSs contain all related correspondence files, and the amendments and revisions are complete and thoroughly documented.

Issues related to values information management have been discussed at length in Section 3.3.7.

Submission and Approval Date Record Keeping

One frustrating aspect of this audit has been in reconciling the records of the Company and those of the MNR related to milestone dates for planning documents. For example, the Company's recorded dates for submission of AWS's and for the receipt of MNR comments are different from the MNR's records of the same events. Comparable difficulties were encountered in dealing with the recorded dates of Annual Report submission and comment. The fact that such discrepancies exist is a minor annoyance in the greater scheme of forest management planning, but one which is sufficiently irksome so as to contribute to the strained rapport between the Company and Gogama MNR. Although the Forest Information Portal is being used by the Company to submit its reports (and therefore, record and track submissions), there remains disagreements between the parties. We believe that a simple record-keeping system should be developed to deal with this issue.

Recommendation #13 recommends that the MNR and Company develop a system for tracking milestone dates. Although the FI Portal seems to provide a basis for such tracking, its summaries can be difficult to interpret and are not always available.

Recommendation # 13

That the Company and MNR develop a system for accurately tracking milestone dates associated with the submission, review and approval of forest management planning documents.

3.6 MONITORING

3.6.1 General Monitoring

Silvicultural Effectiveness Monitoring

TFAI has good systems in place for quality control of silvicultural operations, post-treatment assessments, tracking and scheduling. Staff have developed a good monitoring program to support their silviculture program and to evaluate effectiveness. Field surveys, both formal and informal, are conducted at various stages in the management of a stand. These include:

- visual verification of pre-harvest silvicultural prescriptions, conducted from the air;
- provision of operations maps to harvest contractors – supervisors make annotations on site conditions and possible treatment requirements; these are returned to TFAI and used to identify treatment requirements during AWS preparation. The maps are available on TFAI's website and are regularly updated;
- tree plant quality assessments;
- tending needs assessments, which are conducted on plantations one year after establishment;
- surveys of potential natural regeneration areas; any areas not meeting regeneration standards are re-entered into the queue for subsequent re-survey or artificial regeneration treatments, as required; and
- free-to-grow assessments.

Natural regeneration areas, silvicultural treatments, and free-to grow status are tracked in TFAI's silvicultural information system, which is equipped with a scheduling function to facilitate the planning of silvicultural operations and surveys. Additional attributes that are tracked include status of X, Y and Z lands, and the use of genetically improved planting stock.

During the audit period, Timmins MNR District implemented a program of silvicultural effectiveness monitoring to augment and validate industry information, but none of this activity was conducted on the ShiningTree Forest.

Free-to-Grow Monitoring

The 2001 FMP reported that the total Crown managed productive forest area for the ShiningTree Forest was 267,207 ha. Of this total, 6,953 ha, or 2.6%, was in the Barren & Scattered category, while an additional area of 15,373 ha, or 5.8%, was in the depleted category. Harvested area for the two previous FMP terms was 28,270 ha, which is greater than the sum of the barren and scattered and depleted area, indicating that the Company has kept up to date with free-to-grow surveys. Section 3.8.6 provides more

detail on the Free-to-Grow Monitoring which has taken place.

MNR did not conduct any validation of the free-to-grow assessments conducted by the Company during the audit period, however, our field assessments indicate that the Company information on free-to-grow status is of good quality.

Compliance Monitoring

MNR has an annual district compliance strategy that outlines the broader program targets for each year of the audit term. Each annual compliance plan included monitoring schedules, developed from the prior year's results. The plans and schedules identified priority activities for monitoring which often included inspecting water crossings and the harvest blocks of operators with prior compliance problems, and monitoring stick nests.

Domtar, the original ShiningTree Forest management contractor, prepared a 2001-06 compliance plan based on a review of the 1996-01 compliance strategy, consistency with Timmins District Five Year Compliance Plan and following the 1996 Guideline for Forest Industry Compliance Planning. The 2001 compliance plan included a good description of the administrative and physical characteristics, unique situations, a review of compliance issues including water crossings, trespasses, utilization of hardwood, and wood flow, compliance objectives and strategies for resource protection, staff training and knowledge, education, maximizing efficiency of compliance, meeting new legislative requirements, overcoming historical compliance problems and achieving continuous improvement and included specific roles and responsibilities.

Annual compliance plans are approved as part of each AWS. Prior to 2004, Domtar prepared the annual compliance plans, and reviewed and signed off on shareholder compliance inspections. Much of the compliance responsibilities were assigned to individual shareholders including reporting and training. This changed in 2004, with TFAI as the new management contractor. TFAI's compliance system is well developed and mature. They have detailed procedures for all aspects of their compliance program. Now the TFAI compliance co-ordinator acts as quarterback for the compliance program through the approval of shareholder inspection reports, reporting of all non-compliances, and co-ordination of training. TFAI uses weekly status reports of operations to help improve compliance and these also help shareholders plan and implement their operations. Annual compliance reviews are conducted with the MNR and with the shareholders and operators at the annual operators meeting held each spring.

Overall, the annual compliance plans, schedules and priorities for both TFAI and MNR were met during the audit period.

Table 11 provides a summary of the compliance inspection reports completed during the period.

In the spring of 2004, TFAI undertook a complete review, compilation and update of the FOCIS reports by assembling all known reports into one digital FOCIS database and closing any open reports. Prior to this, the digital compliance reports were located on various computers of each shareholder's compliance inspector or on MNR computers. This was a worthwhile effort as it provided the facility to compile reports in various

manners and to establish a database for further use.

Table 11. Summary of compliance inspections.

	# of Inspections			# Non-Compliances			% Non-Compliances		
	SFL	MNR	Total	SFL	MNR	Total	SFL	MNR	Total
2001-02	109	52	161	12	4	16	11%	8%	10%
2002-03	99	21	120	5	1	6	5%	5%	5%
2003-04	114	47	161	2	2	4	2%	4%	2%
2004-05	81	7	88	3	0	3	4%	0%	3%
2005-06	49	13	62	1	0	1	2%	0%	2%
Total	452	140	592	23	7	30	5%	5%	5%

There were 592 compliance inspections during the audit period, 452 of which were carried out by the SFL holder (or other shareholder compliance inspectors), and 140 of which were carried out by MNR staff. There were 23 non-compliances reported by the SFL-holder and 7 reported by the MNR. For both the company and SFL, 5% of the total inspections undertaken found incidents of non-compliance. Most of the non-compliances were related to harvesting, AOCs, crossings, and leaving merchantable timber. All of the non-compliances were classed as minor with the exception of three moderate and three significant. Overall, the level of non-compliance was low during the audit period.

The level of MNR inspection of activities has declined dramatically over the five-year audit period. In the first three years of the audit period there was an average of 40 MNR inspections per year. For the fourth and fifth years, there were 7 and 13 inspections respectively. Primary reasons for the lack of inspections related to staffing shortages, turnover, and existing staff dealing with other responsibilities. Although the rate of non-compliance does not indicate a cause for concern, the Audit Team believes that it is important that MNR maintain a reasonable compliance-monitoring presence on the Forest.

Recommendation # 14

That MNR increase the level of its compliance monitoring activities on the Forest.

3.6.2 Annual Reports

There were five annual reports (ARs) related to the audit period. Table 12 provides dates of each annual report submission, review and approval.

The 2001-02 and 2002-03 annual reports were prepared under the 1996 FMPM and included a spring silviculture submission due on April 15 and a fall harvest submission due on November 15. The 2003-04 ARs were to be prepared according to the 1996 FMPM with additional requirements as per the AR Phase-in provisions identified in Part E of the 2004 FMPM (i.e. Table AR-3 (clearcut size) and text requirements relating to planned clearcuts). Also according to the Forest Information Manual (FIM) requirements, all spatial information, composite scale maps and tables for the 2003-04 AR had to be submitted digitally through the Forest Information Portal and meet the FIM mapping technical specifications. The 2004-05 and 2005-06 ARs were prepared under the full 2004 FMPM requirements, which require only one annual submission, on Nov.

15.

The first four annual reports were completed prior to the audit; as the 2005-06 AR was not due until Nov. 15/06, it is not included in this assessment. All four annual reports audited were initially submitted on time. MNR generally did a comprehensive review of the report and associated maps and coverages. There were numerous minor alterations requested dealing with the need to provide more details, and correct coverages and associated information to meet the FIM technical specifications, and matching the spatial data to the tabular data.

The main problems with the annual reports were the significant delays in MNR review and the delays in submission of the final annual reports by the SFL holder. Table 12 summarizes the submission and approval histories of the Annual Reports.

Another delay in the final annual reports was due to a change in management contractor for the Forest. Domtar prepared the 2001-02 spring and fall and 2002-03 spring annual reports, while TFAI prepared the other annual reports and provided the final submissions for all annual reports. TFAI had to respond to the MNR reviews of the Domtar annual reports and prepare the final annual reports well after the annual report periods had passed.

Table 12. Annual Report submission and approval histories.

FMP/AWS	Due Date	Draft Subm.	Re-Submitted	MNR Review(s)	Final Subm.
2001-02 AR Spring	15-Apr-02	12-Apr-02, 12-Nov-02	Apr-04	31-Jul-03, 4-Oct-04	21-Mar-05
2001-02 AR Fall	15-Nov-02	15-Nov-02	Jan-03, Apr-04	19-Dec-02, 7-Nov-03,4-Oct-04	21-Mar-05
2002-03 AR Spring	15-Apr-03	15-Apr-03	NA	14-Oct-04	17-Mar-05
2002-03 AR Fall	15-Nov-03	17-Nov-03	NA	4-Oct-04	16-Mar-05
2003-04 AR Spring	15-Apr-04	15-Apr-04	NA	14-Oct-04	17-Mar-05
2003-04 AR Fall	15-Nov-04	15-Nov-04	NA	16-Dec-04	16-Mar-05
2004-05 AR*	15-Nov-05	15-Nov-05	NA	See discussion below	
2005-06 AR*	15-Nov-06	pending	NA		

* The 2004/05 and 2005/06 ARs were produced according to the requirements of the 2004 FMPM, which required only one submission per year (on Nov. 15), rather than the two submissions required under the 1996 FMPM

The 2001-02 spring annual report was submitted on April 12, 2002. MNR stated that all components were not submitted until November 12, 2002, however there was no record of this in the documentation provided to the auditors by the SFL. MNR stated they did a review in July 2003 and there were MNR review records dated October 4, 2004. The final submission was provided on March 21, 2005.

The 2001-02 fall annual report was originally submitted on November 15, 2002 and according to MNR had to be completely re-submitted in January 2003 due to major errors in the digital information. MNR did not complete its review until almost a year later on November 7, 2003. A revised annual report was re-submitted in April 2004, and MNR completed its second review five months later in October 2004. Five months later on March 21, 2005 a final version was submitted by the SFL.

The 2002-03 spring annual report was submitted on time, but it took 18 months for MNR to review it and a final submission was not completed until five months later on March 17, 2005. MNR's review of the fall portion of this annual report took about 11 months to complete and it took the SFL over five months to provide the final submission.

The 2003-04 annual report had a six month delay in review for the spring portion, but the review for the fall portion was completed in a timely manner – within one month. The 2004-05 annual report, prepared under the 2004 FMPM was submitted by the November 15, 2005 deadline via the forest information portal. MNR provided comments on the report (the date of the comments is debated by the Company and MNR – see Recommendation #13 above) and there is ongoing disagreement between the MNR and the Company about whether the comments require resubmission of the report.

The general pattern of MNR review and company response to the MNR's review suggests that neither party attaches much significance to the schedule requirements for Annual Reports beyond their initial submission. In spite of the fact that MNR's requirements for its review of annual reports have recently decreased[12], for those reviews which are undertaken, MNR remains obligated to meet the timelines identified in the FMPM. The Audit Team believes this situation should be rectified and therefore makes the following recommendations.

Recommendation # 15

That the MNR and the Company finalize the status of the 2004-05 annual report and if required, submit it to the Forest Information Portal.

Recommendation # 16

That the Company provide complete and accurate annual report submissions. The Company should also ensure that its responses to MNR reviews are comprehensive and timely.

Recommendation # 17

That MNR complete annual report reviews consistently according to the schedule identified in the FMPM.

3.6.3 Report of Past Forest Operations

TFAI is required to prepare a Year 10 Annual Report for 2005-06, the final year of the 2001 FMP. The draft of the AR was due on November 15, 2006 . Since this audit was conducted prior to this, the Audit Team's review of past operations centred on the RPFO that was prepared in 2003. This RPFO covered the 1996-2001 period.

Domtar submitted the draft RPFO to the MNR, as required, for review on March 31,

[12] On December 1, 2004, MNR issued direction to waive the District requirement to review all annual report submissions. Instead, MNR will review the more comprehensive ARs that are produced at the end of years 3, 7, and 10 in the plan period, while review of ARs produced in other years is at the discretion of the District.

2003, two years after the expiry of the 1996 FMP. The RPFO appears to fairly accurately present the basic data regarding harvest, renewal, compliance, and management unit area, as well as disturbance size areas Some discrepancies on the order of several hundred hectares were found between the 2000-01 annual report, the RPFO, and the Trend Analysis regarding area mechanically site prepared and areas assessed and meeting FTG standards. The assessment of sustainability, hampered by a lack of data for some indicators, was weak (see 3.7.2). Additionally, the draft was incomplete in several areas, most notably lacking reviews of the assumptions used to prepare the 1996 FMP and of the effectiveness of the implementation of the selected management alternative, as well as discussion of issues and trends, conclusions, recommendations and summary.

Although the draft RPFO was received by MNR on time, five months before the transfer of management responsibility of the ShiningTree Forest from Domtar to TFAI, MNR had not reviewed the draft by the time TFAI took over. A cursory review of the draft RPFO was done by MNR Region, but TFAI was not notified of this and the comments were not forwarded to TFAI until January of 2005. TFAI, having assumed that the RPFO had been finalized by Domtar, presented the unrevised draft at the first open house for the 2006 FMP as a "deemed final report". In February 2005, almost two years after the initial draft submission, MNR Timmins District provided comments on the draft and requested that the Company revise the report for the second Public Information Centre. As before, the Company presented the original draft as deemed final.

The draft RPFO reviewed by the Audit Team does not meet many of the requirements of the 1996 FMPM. However, because the MNR reviews were so late and the Domtar staff who prepared the draft RPFO had moved to other forest units, and in some cases, other companies, it would have been very challenging for TFAI to have complied with the revision requests. Since MNR was well aware that the management company of the forest was changing, they should have factored this into their review scheduling. At this point in time, it would be very difficult, and of questionable value, for TFAI to try to complete the RPFO to bring it up to a reasonable standard. Accordingly, no recommendations are issued. The Year 10 AR will provide a more current analysis of the key issues that should have been discussed in the RPFO.

3.7 Achievement of Management Objectives and Forest Sustainability

The IFAPP directs the Audit Team to assess the sustainability of forest management using a methodology described in the IFAPP. The IFAPP states that "Compliance with the applicable criteria [of the IFAPP] will determine whether the forest unit complies with the general principle of forest sustainability". The field observations of the Audit Team are also to be considered in assessing sustainability. Section 3.7.1 assesses the extent to which the objectives of the 2001 FMP have been met. Sections 3.7.2 and 3.7.3 review the sustainability information in the Comparison and Trend Analysis and RPFO, respectively, while section 3.7.4 presents our conclusions regarding sustainability.

3.7.1 Achievement of Management Objectives

The Audit Team reviewed the extent to which objectives set out in the 2001 FMP were

achieved – an assessment of each objective is shown in Table 13. The overall assessment is that the Company's objectives generally achieved their planning direction as described in the FMP. In some cases the objectives were intended to apply to a period longer than the 5-year audit period. This is appropriate for objectives which encompass broad issues, or those which reflect long-term changes in the nature of the forest. However, we are unable to assess the achievement of those objectives and their related targets because of the time scale involved; furthermore we were not able to assess progress towards meeting some of those objectives because data specifically for the ShiningTree Forest are not available as its management has become amalgamated into the Timiskaming Forest. Nonetheless, the Audit Team does not feel that this factor is a significant impediment in obtaining a perspective on the quality of management of the forest.

Targets related to silviculture and renewing the forest appear to have been met, and discussions in Section 3.4.4 support the good quality of silviculture generally being implemented on the forest. Harvest volume targets were met or exceeded for conifers and generally not met for hardwoods. As discussed in section 3.4.2, the reasons for this include underestimation of yields for conifers and a poor market for some hardwood products.

Table 13. The Audit Team's Assessment of the Achievement of Goals and Objectives of the 2001 FMP.

Goals/ Objectives	Achievements and Explanation
Forest Diversity	
Landscape Level Diversity Objective #1: To increase the amount of productive forest area designated within the PR1, PW1, and PRW forest units in an effort to maintain current white and red pine harvest levels. *Targets:* • Increased the Crown Managed Forest Area, by the end of T1, of the PR1 FU by 110 ha through planting of red pine. Five year target area to plant is 60 ha. • Increased the Crown Managed Forest Area, by the end of T1, of the PW1 FU by 148 ha through planting of white pine. Five year target area to plant is 92 ha. • Increased the Crown Managed Forest Area, by the end of T1, of the PRW FU by 37 ha through planting of red and white pine. Five year target area to plant is 25 ha.	During the 2001-2006 FMP term, Domtar and Timiskaming Forest Alliance Inc. planted 196,700 red pine; and 203,500 white pine; on approximately 109.3 ha and 156.5 ha respectively, for a total area of 265.8 ha, compared with the 5-year target area for the total of the three forest units of 177 ha. The Companies planted the respective pine species on appropriate site conditions and conducted mixed red and white pine planting on some sites to achieve a distribution of the three forest units. The five-year targets for white and red pine renewal were exceeded.
Landscape Level Diversity Objective #2: To maintain the Managed Crown Area available for timber production within a range consistent with the natural benchmark. *Target*: Using Forest Unit Stability constraints, ensure that the available forest unit area remains within + or – 20% of the maximum or minimum level achieved in the natural forest benchmark scenario.	Given the broad bands around acceptable forest unit area, we believe the target was likely achieved. As there is no data on ShiningTree Forest Unit areas in the 2006 Timiskaming Plan, no numbers are available to confirm this. However, the relatively close adherence to the planned levels of activities described above supports the assertion that the target was likely achieved.

Goals/ Objectives	Achievements and Explanation
Landscape Level Diversity Objective #3: To provide for a distribution of disturbance patches that more closely resembles the expected pattern and size produced by wildfire. *Target:* Clearly demonstrate that the planned harvest blocks and resulting disturbance patches, viewed within a 20 year moving window, (1981-2001 and 1986-2006), have a total area in each disturbance patch size class that is progressing toward the suggested distribution for site region 3-e.	The planned disturbance blocks were designed to meet this target. Although not all planned harvests occurred, those which did take place captured the diversity of sizes consistent with addressing the target.
Landscape Level Diversity Objective #4: To produce and maintain, when and where possible, a specified amount of area, from each forest unit, in age classes that demonstrate old forest characteristics. *Targets:* To establish and maintain a minimum of 15% of the total forest unit area existing in the mature and over-mature age classes for each forest unit. To establish and maintain a minimum of 5% of the total forest unit area existing in the over-mature age classes for each forest unit.	Data are not available to track this target as the data for the ShiningTree Forest have been merged with the Timiskaming Forest. However, the target was intended to be achieved by the time of the Desired Future Forest Condition (2041). A comparable target exists in the 2006 Timiskaming FMP.
Landscape Level Diversity Objective #5: To provide undisturbed internal residual area or patches that closely resemble the expected result from wildfire in both quantity and composition or type. *Target:* - The quantity of internal residual area, on average, within the total number of clearcuts created during the 2001-2006 period, shall total to 4% of the cut area.	Inspection during the site visit confirmed that this target was achieved.
Stand Level Diversity Objective #1: To provide for vertical and horizontal stand structure within harvest disturbance areas. *Target (Abbreviated description):* For each harvest block, modify harvesting practices to retain between 30-50 dead and/or declining trees per ha, with species composition representative of the overstorey composition, and with a minimum of 10 trees/ 5 ha being greater than or equal to 30 cm dbh and the remainder being not less than 12 cm dbh within each area selected.	Inspection during the site visit confirmed that this target was achieved, although many trees retained post-harvest were felled by windthrow.
Genetic Diversity Objective: To conserve the existing genetic diversity of tree species on the ShiningTree Forest.	TFAI strives to maintain the existing genetic diversity of tree species in three ways: 1) Ensuring that seed zones for each species are maintained through their cone collection, stock production, and tree planting programs; 2) Following the guidelines for maintaining genetic diversity of the Northeast Seed Management

Goals/ Objectives	Achievements and Explanation
	Association (NESMA) in their tree improvement program; and 3) Natural regeneration retains the local genetic stock on sites where this prescription is applied.
Social and Economic	
Broad Social and Economic Objective: To provide a sustainable supply of timber products to meet the requirements of the shareholder companies of ShiningTree Forest Inc. The requirements are to be consistent with Appendix G of the Shareholders Agreement; Appendix E of the SFL document; a consideration of MROL's for those shareholder facilities and others that received products from the forest. Targets (Annual Total Requirements) SPF – 187,720 m3 Pw/Pr – 3,250 m3 Bw – 3,850 m3 OH – 1,300 m3 Po – 65,100 m3. Note: targets used in SFMM are somewhat higher to account for losses due to poor stem quality and possible over-estimates of volume.	The five-year forecast of harvested volume (FMP-21) in the 2001 FMP is (some minor rounding): SPF = 203,920 m3/yr Pw/Pr = 2,665 m3/yr Bw – 54,000 m3/yr Po – 94,100 m3/yr OH – 8,550 m3/yr. Of these forecast volumes, only the Pw/Pr was below target. Actual achievements during the audit period (Actual as percentage of planned in parentheses), using draft data for the 2005-06 year, were as follows: SPF = 242,108 m3/yr (119%) Pw/Pr = 2,261 m3/yr (86%) Bw – 22,550 m3/yr (42%) Po – 77,875 m3/yr (84%) OH – 322 m3/yr (4%) The Company exceeded forecast SPF and Po volume production and came close on Pw/Pr volumes. White birch volume was above the planned level, but below the objective, as demand increased above initial expectation but the yield per ha was well below expectation.
To provide a consistent supply of timber products during the next 30 years to the shareholder Companies of ShiningTree Forest Inc. *Target:* During the next 30 years, a total decrease of no more than 15% in harvest volume for SPF and poplar.	According to FMP-12, the volume of SPF would remain at 200,000 m3/yr until 2021 and reach 184,000 m3/yr by 2041. The volume of poplar appears to decline by 15% by 2031. The future achievement of this objective is moot given the amalgamation of the ShiningTree and Timiskaming Forests.
To provide opportunity for the development of a commercial fuelwood operation that would supply the surrounding towns of Gogama, Westree and ShiningTree. *Targets:* Identify a specific harvest block in the BW1 forest unit allocation for the 2001-2006 period which can be easily developed for a commercial fuelwood operation. Provide a Bw fuelwood target volume of 1000 m3/year during terms 1 and 2.	A commercial use fuelwood area was identified by MNR in the 2001 FMP. The 2001 FMP did not contain a forecast of the volume that would be provided for personal or commercial fuelwood; as an interested commercial fuelwood operator did not emerge until 2003. Amendment #24 in 2003 added a 237 ha block of BW1 to the planned harvest to provide commercial fuelwood. During the first four years of the FMP, 3230 m3 of commercial fuelwood (808 m3/yr) and 989 m3 (247 m3/yr) of personal fuelwood was harvested.
To minimize the area burned due to human-caused forest fires. *Target:* No significant loss of timber value due to fire during the 2001-2006 period.	No reportable area was depleted due to natural causes during the entire FMP period.

Goals/ Objectives	Achievements and Explanation
Recreation Objective: To provide a suitable environment for resource-based recreation and other commercial activity. *Targets:* • During the 2001-2006 period, the GACC is to provide input and review of current road use strategies annually. • During the presentation of the AWS to the GACC the upcoming road use for the year is to be discussed, and if required, mutually develop mitigative measures.	Discussions with GACC members, and review of meeting minutes confirmed that these targets were met.
Values Dependent on Forest Cover	
To undertake all forest management operations using sound environmental practices such that any negative environmental impacts are avoided or minimized. *Target:* Five-year target is to ensure that no significant negative environmental impacts resulting from forest management practices occur in the forest as documented in Forest Operations Compliance Reports.	Very few non-compliances were reported for the Forest (See section 6.1). None of the non-compliances involved major environmental effects, and there were no systemic issues.
Silviculture	
To increase the productive forest area supporting black spruce working group stands. *Target:* Increase the Crown Managed Forest Area, by the end of T2, of the SB1 + SP1 + LC1 + SF1 FU's by 1680 ha through the planting of black spruce. Five year target area to plant is 465 ha.	During the 2001-2006 FMP term, Domtar and Timiskaming Forest Alliance Inc. planted a total of 1,492,600 black spruce seedlings. At an average planting density of 2,000 trees/ha, the area covered would be approximately 746 ha. Tending to control competing vegetation was conducted, where needed, to maintain the desired working group on these plantations. The 5-year target area of 465 ha was exceeded for the 2001-2006 FMP term.
To enhance the value, growth and yield of forest stands on the ShiningTree Forest. *Targets:* Immediately begin (2001) using this seed [i.e. genetically-improved] to a level of 100% of the intensive renewal programs for jack pine and black spruce. To pre-commercially thin a minimum of 100 ha per year on sites where jack pine has been aerial seeded. Five year target is 500 ha.	The objective has been met. Although improved seed is not being used for all planting stock production for black spruce and jack pine, the process has been started. Spatially tracking the use of genetically improved seed source will allow growth and yield comparisons to be made in the future to quantify the benefits of this program. The 5-year target area for pre-commercial thinning was exceeded for the 2001-2006 FMP term.

The previous IFA Report[13] assessed the achievement of five objectives contained in the 1996 FMP. There were five objectives in that FMP, related to harvest, renewal, environmental quality, integrated resource management and biodiversity. The IFA report noted that the objectives associated with environmental quality, integrated resource management and biodiversity could not be meaningfully evaluated because "the wording is so general, even when there are associated targets"

The previous IFA report found that the harvest area objective for conifer forest units was somewhat under-achieved (94% of the actual area for jack pine forest unit was attained, and 83% of the planned area of spruce forest units was attained), but the volume target was exceeded by about 100,000 m^3. The report noted that the divergence of area and volume achievement had been present on the forest for some time (as does this report in Section 3.4.2), and that steps were being taken to improve the discrepancy. This is addressed more fully in Section 3.4.2 of this report. Similarly, the previous audit report found that the harvest volume shortfall was significant, an issue also addressed in this audit report in Section 3.4.2.

The previous IFA report noted that the renewal objectives of the 1996 FMP were attained in spite of the shortfall in harvest area. This was attributed to a lower-than-planned attainment of natural regeneration, but an offsetting greater-than-planned attainment of artificial regeneration.

Although the 2005-2006 Annual Report was not reviewed in detail in this audit (because it was produced and delivered after the audit period), we did examine the document's appraisal of the achievement of the objectives of the 2001 FMP to compare it's assessment with those provided in this audit. The Annual Report's assessment is presented in a table similar to Table 13 above. The Annual Report's conclusions are very similar to those presented above for every objective and so are not reported on individually here.

3.7.2 Review of RPFO Assessment of Sustainability

As discussed in section 3.6.3, the RPFO was not reviewed in a timely manner by MNR and the draft report was deemed to be final by Domtar and TFAI. The RPFO is weak and incomplete in a number of areas, and this extends to the assessment of sustainability. However a major reason for the incompleteness of the sustainability assessment is that the data required to assess many of the indicators were not calculated in earlier FMPs, and so were not available. For example, the disturbance size class data were only available for the 1996-2001 period, and so there was no basis available for a comparison over time.

The report reviewed several of the indicators of sustainability that are described in the 1996 FMPM – area by age class by working group, area of Crown managed forest available for harvesting, and size class distribution of clearcut and wildfire areas. The indicators reviewed showed little change and therefore no decrease in, or risk to, sustainability was identified. The RPFO did not draw any overall conclusion regarding sustainability and due to the limited basis of the analysis, the RPFO is not particularly helpful in terms of drawing any conclusions regarding sustainability.

[13] ArborVitae Environmental Services. 2002. ShiningTree Forest Independent Forest Audit 1996-2001.

3.7.3 *Review of Comparison and Trend Analysis of Planned versus Actual Forest Operations*

The Audit Team reviewed the Report titled "Comparison and Trend Analysis of Planned versus Actual Forest Operations" and found that the format and content met the requirements expressed in IFAPP. This Report was prepared by the Company staff and is included as Appendix I of this report.

The Trend Analysis identified a number of key trends that have been in place over part or all of the last several planning terms.

- Planned harvest area has exceeded the actual harvest levels for all planning terms since 1986. The level of discrepancy has generally been greater for hardwoods than for conifers, although the level of poplar harvest has approached (or slightly exceeded) that planned since the 1991 plan term.
- Actual harvest volumes exceeded those planned for the 1986 and 1991 plan terms, but for the most recent two terms the opposite has been true. However, conifer yields, particularly jack pine, continue to exceed those planned. The opposite is true for hardwoods. The Trend Analysis and this report discuss the progress that has been made in improving jack pine yield estimates.
- Since the Forest has become an SFL most silvicultural activities have achieved or exceeded planned levels. The exception to this is natural regeneration. The Trend Analysis suggests that these sites should not be declared for natural regeneration until the regeneration has been assessed. This audit report concurs with that approach; and
- The company has made very good progress in conducting free-to-grow assessments, which is consistent with the findings of this audit (Section 3.8.6).

The Trend Analysis does a very thorough job of outlining the factors behind the trends, and describes the adjustments that TFAI has made in response to the situation and the evolving level of understanding. The trends, and factors driving them, were very similar to those that were identified in this audit, and the information in the tables matches the source documents. In conclusion, the Trend Analysis has been reviewed with respect to criterion 7.4 in the IFAPP and it was found to be correct and complete.

3.7.4 *Conclusions Regarding Sustainability*

The Audit Team's conclusions regarding sustainability have attempted to take several factors into account. Portions of the reviews in Sections 3.7.1 – 3.7.3 contribute to the assessment, but not all aspects of these sections are equally relevant. In addition to the information presented in the above sections, the Audit Team draws heavily upon the following to base its conclusions regarding sustainability:

- The Company's adherence to the required forest management guides and manuals;
- The harvest and regeneration are in balance and there is no overharvesting on the Forest, judging from the available data and observations made during our site inspection;

- The good performance of the company in implementing an appropriate silviculture program;
- The fulfillment of the goals and objectives of the 2001 FMP (with the caveat that some of the targets cannot be assessed, for reasons identified in Section 3.7.1);
- The existence and implementation of well-considered AOC prescriptions which protect the non-timber values of the forest;
- The excellent performance of the GACC in providing input into the forest management process;
- Adherence to the conditions of the SFL;
- The very high level of commitment and professionalism demonstrated by the Company and its staff.

In addition to the review of the information in Sections 3.7.1 – 3.7.3, the Audit Team has also interviewed many people associated with the Forest, spent two days viewing the results of operations on the Forest, and gained a great deal of insight into the management issues of the Forest and the performance of Company and Ministry staff.

Based on the above considerations and the material presented throughout this report, we conclude that the ShiningTree Forest was managed within the bounds of sustainability during the period of the audit as defined by the MNR and as outlined in the IFAPP.

Although the overall impression of management of the Forest is definitely positive, the Audit Team has identified a number of topics where management of the forest could be improved. These topics encompass matters involving both the MNR and SFL holder, and several for which the collaborative efforts of the parties will be involved. The Audit Team observes that the rapport between the Company and the Gogama MNR was an area of concern during the audit; steps need to be undertaken to address the impediments to developing a better rapport in order to ensure that management of the forest is not hindered by an unproductive working relationship.

3.8 CONTRACTUAL OBLIGATIONS

3.8.1 Payments of Crown Timber Charges

An inquiry was made to Corporate MNR to see if there were records of outstanding Crown dues, renewal payments or other charges. As of April 30, 2006, no overdue payments were identified.

3.8.2 Forest Renewal Trust

The required minimum balances were in place for the ShiningTree Forest for each of the five years of the audit period.

We reviewed company records for items invoiced to the Forest Renewal Trust for the years 2001/02 through 2005/06, for the ShiningTree Forest SFL. All invoices for this period were examined and the expenses were found to be eligible and appropriate as per the requirements of the Renewal Trust Agreement. TFAI maintains good documentation of the silvicultural expenses, and maps and records of the treatment

projects as required by the licence.

Reviews of the renewal rates were conducted by the Company and MNR as required by the licence. Rate reviews were conducted annually, and changes to the rates for conifer and hardwoods were implemented in 2002 and 2003. At the start of the audit period, the Forest Renewal Trust Fund for the ShiningTree Forest was carrying a large surplus of funds. Renewal rate changes were designed to reduce this surplus, and at the end of the audit period (March 31, 2006) the surplus had been reduced to approximately $80,000.

3.8.3 Forestry Futures Trust

One silvicultural project had been funded in part through the Forestry Futures Trust. This involved a two-year project for the pre-commercial thinning of overstocked jack pine plantations, project #533-1-R19. This project had been completed by a First Nation contractor. We verified this project in the field, and found that the quality of implementation was good.

The Company maintains good records and maps of the Forestry Futures Trust projects. Reports had been submitted by the Company to the Forest Futures Trust as required and were of good quality. At the time of the audit the final report for the project had been submitted, and was approved by the Forestry Futures Trust committee. Additional projects relevant to the ShiningTree area have been applied for in the current FMP term (2006-2011) for the Timiskaming Forest.

3.8.4 Wood Supply Commitments

There were no wood supply commitments listed under Appendix E, and no special conditions under Appendix F of the ShiningTree SFL.

3.8.5 Specified Procedures Field Assessment

We conducted a field assessment of approximately 31.4% of the total area of silvicultural treatments that were invoiced to the Forest Renewal Trust for the year 2004-2005, including areas surveyed for free-to-grow status. In all cases the treatments were in place as mapped in the annual reports, were appropriate for the site conditions, and had been implemented to a good standard of quality.

The Specified Procedures report for the ShiningTree Forest, prepared by KPMG, did not identify any significant errors in the documentation for the Forest Renewal Trust. The report identified a number of vague items: all of these items were checked and were verified to be eligible expenses.

3.8.6 Inventory and Monitoring Obligations

X, Y, and Z Lands

The Company is keeping up its silvicultural obligations with respect to X, Y and Z lands. The original area of X, Y, and Z lands listed in the ShiningTree SFL licence document was 8,418 ha; this has now been reduced to 542 ha. The remaining areas of X, Y and Z lands are being tracked by the Company in their GIS system. They are dealt with in the same manner as regular silvicultural areas and are scheduled for treatments or surveys as required.

Free-to-grow Assessments

The Company is meeting its obligations with respect to the conduct of free-to-grow surveys. For the 2001 FMP term, the forecasted area for free-to-grow assessment was 13,370 ha. The approximate area assessed during this period was 10,420 ha or 78% of the forecast. As previously stated, the inventory update status for the ShiningTree Forest indicates that there is little backlog in unsurveyed areas, so the apparent shortfall from the forecasted levels in the achievement of free-to-grow assessment is not significant.

The free-to-grow status of treated sites (including natural regeneration areas) is tracked in TFAI's silvicultural system for the annual scheduling of assessments. Assessed areas that do not meet the silvicultural standards re-enter the system and are scheduled for further treatment or re-assessment, as appropriate.

Generally, the free-to-grow results show good success in the "pure" forest units, but a lower success rate in mixedwood forest units. TFAI has not a conducted formal analysis of its free-to-grow information for the purpose of FMP preparation. This analysis would benefit FMP preparation by helping to quantify success rates for SGRs, supporting the continuing refinement of SGRs, and in validating successional pathways.

Recommendation # 18

That TFAI conduct an analysis of its free-to-grow information, and siivicultural effectiveness monitoring information, where appropriate, for the preparation of the next FMP.

3.8.7 Previous Independent Forest Audit

The previous IFA for the ShiningTree Forest was done in 2001. The audit made only 4 recommendations (one of which was to extend the licence). Table 14 summarizes the steps taken to address the recommendations of the previous audit.

The previous audit was submitted on Feb. 27, 2002. The direction in place at the time required that an action plan to address the findings of the audit be prepared within 2 months of the delivery of the audit report. The Action Plan was submitted in mid October, 2002, approximately 5 ½ months late. The Action Plan was approved in late December 2002. Because development of the action plan was led by Domtar, the managing agent for the Forest at the time, and because Domtar no longer has the responsibility, no recommendation is made.

The status report on the implementation of the previous audit's recommendations was due in December, 2004 – two years after the action plan was approved. The status report was not received by MNR's Forest Management Branch until Sept, 2005, approximately 9 months late. TFAI was managing the Forest at the time the status report was due and so the following recommendation is made. Because several of this audit's recommendations are directed toward the MNR, the following recommendation is directed towards both the company and MNR.

Recommendation # 19

That MNR and the Company submit the status report on the implementation of this audit's recommendations on time – two years after approval of the Action Plan identifying how the recommendations will be addressed.

Table 14. Review of the implementation of recommendations made in the 2001 Independent Audit of the ShiningTree Forest.

Recommendation	Actions Taken	Status
1. The MNR District should analyze why GACC has not been effective in achieving its mandate and develop measures to improve the situation, in conjunction with the company and GACC where appropriate. If, after a reasonable period of time, these measures do not result in sufficient improvement, MNR should consider other options to obtain a functional and effective LCC for the ShiningTree Forest.	MNR reviewed GACC, its Terms of Reference, operation and function during the audit period. GACC's performance will be compared to other regional LCCs. Changes were made to the Terms of Reference, purpose, membership, roles and responsibilities, personnel and financial support, reports and records and procedural matters. Since then, the amalgamation of ShiningTree with Timiskaming has meant that GACC has continued as one of 2 LCC's for the Timiskaming Forest. Joint meetings are now held from time to time, and some personnel changes on GACC have been significant.	There has been much improvement in the function of the GACC. New members are working well together, attendance is good, and over-all there is significant improvement in the committee. See Section 3.2.1 for details. Recommendation is closed.
2. The Company should develop and implement a slash pile management program that would reduce the loss of productive forest area.	Slash piling has been added to harvest contractor responsibilities effective with the 2002-03 AWS, and selective use of cut-to-length has reduced roadside slash where used. Slash pile burn plans continue to be submitted with AWS's.	Company made gradual progress during audit period to implement an effective slash pile management program. Recommendation considered closed.
3. MNR should update the SFL to reflect the current status of the unit and company shareholders.	Area figures from the stewardship inventory for the 2006 FMP were to be used to update the landbase but given the amalgamation, this is now redundant.	Rendered redundant with amalgamation.

3.8.8 Licence Extension

The SFL for the ShiningTree Forest requires that an independent team review the Company's compliance with the terms and conditions of the licence and recommend to the Minister whether the term of the licence should be extended for five years. Under normal circumstances the result of an IFA is a recommendation regarding licence extension, and that is clearly what was envisioned here. However, given that the ShiningTree forest is being amalgamated into the Timiskaming Forest and will cease to exist, there will shortly be no licence to extend. Therefore this audit does not make a recommendation regarding licence extension. We note however, that the results of this audit are generally positive and under normal circumstances would have led to a recommendation to extend the licence.

4 SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

This audit reviewed the management of the ShiningTree Forest for the period April 1, 2001 to March 31, 2006. The review included examination of the content of the 2001 FMP for the ShiningTree Forest and, to a lesser extent, the content of the 2006 FMP for the Timiskaming Forest. The audit examined implementation of the 2001 FMP and management of the Forest during all five years encompassed by the FMP.

This audit makes 19 recommendations and 3 suggestions (Table 15). A number of recommendations are directed towards the MNR and some are directed jointly at the MNR and the Company. Given the fact that the Timiskaming and ShiningTree Forests are being amalgamated, and that the Kirkland Lake MNR District has been identified as the Lead District for the amalgamated forest, it may be appropriate for the Kirkland Lake District to be the MNR's lead in dealing with some recommendations of this audit, whereas for others it will be more appropriate for the Gogama Area and Timmins District Offices to be the lead.

This audit found that management of the Forest for the period reviewed was sustainable. The Audit Team was impressed with the level of TFAI staff commitment and the staff's desire to develop innovative approaches to dealing with aspects of forest management. The Audit Team also found MNR staff to be committed to ensuring that management of the Forest proceeded wisely.

Ministry – Industry Rapport

This audit has identified that a problem exists in the relationship between Company Staff, and Staff of the MNR's Gogama office. The difficulties produced by the impaired rapport have been recognized by both the MNR and Company for some time, but no real progress has been made in improving the situation. Although the MNR lead for managing the amalgamated Timiskaming Forest will be the Kirkland Lake District, the MNR's Gogama office will still play a role in the Shining Tree area and so it is important that sincere efforts be made to improve the rapport between the Company and MNR Gogama staff.

The Gogama Area Citizens' Committee

The previous IFA identified issues with the GACC as a troublesome aspect of the stewardship of ShiningTree Forest. It is therefore very notable that the GACC has improved its abilities and functioning to such an extent as to be considered one of the most positive aspects of the ShiningTree Forest. The committee works well, is well supported by the MNR and plays an important role in giving the area's citizens a voice in management of the forest.

Values and Water Crossings

Management of the values on the Forest was a point of some contention. Although the Audit Team found that values prescriptions are applied appropriately in the field, there are issues related to the currency and accuracy of values information available to the Company. Company staff found it frustrating that the values update process does not

function as well as intended. The Audit Team found that a disproportionate number of AWS revisions and FMP amendments were related to values, also suggesting that management of values information needs improving.

The Audit Team was impressed with the efforts of the Company in developing two approaches to issues related to aquatic values management. The Company's attempt to estimate thermal regimes seems a reasonable approach to dealing with the general paucity of rigorously-collected data, and the Company's interpolated watershed estimation system showed a blend of practicality and innovation. Gogama MNR staff are reluctant to embrace the approaches; the Audit Team feels that onus is now on the MNR to objectively evaluate the systems and provide constructive criticisms on the manners in which the systems could be improved to satisfy their perceptions of the shortcomings.

Planning and Harvest Levels

The discrepancy between planned and actual harvest levels has improved considerably over the last plan period compared to earlier ones. However, the relative parity of the proportions of planned harvest area and volume that were actually harvested masked some significant species-specific discrepancies. The volume of conifers harvested considerably exceeded that planned, although less-than-planned area of conifer-dominated stands were harvested, leading to the conclusion that the estimated yields are inaccurate. Conversely, the volume of hardwoods harvested was disproportionately lower than the area of hardwood-dominated stands which were harvested, particularly for birch.

This situation is being addressed, in a somewhat complicated manner by the amalgamation of the ShiningTree and Timiskaming Forests. In the 2006 Timiskaming FMP, TFAI made some adjustments to yield curves but the amalgamation limited the Company's options for correcting yield curves, since the yields in the plan applied across the entire new Timiskaming Forest. The yield estimates on the former Timiskaming Forest were, according to the Trend Analysis, quite accurate, and it remains to be seen how well the actual harvest volumes correspond to the planned levels. The new FRI for the ShiningTree portion of the Forest, which is anticipated within five years, is expected to improve the ability of planners to estimate harvest volumes. In this situation, the Audit Team did not feel that a recommendation was warranted.

Forest Operations

Operations on the Forest were found to be of high quality. The quality of harvesting operations was good and there were no serious issues regarding renewal, although natural regeneration levels were not consistent with forecasts. Two factors mitigate concern about the apparent natural regeneration shortfall: 1) The forecast for natural regeneration in the 2006 Timiskaming Plan are more consistent with the levels achieved for the ShiningTree Forest during the 2001 FMP term, and 2) Areas that were scheduled for natural regeneration in the 2001 FMP, but which have not yet been reported on, have been carried forward into the 2006 FMP for the Timiskaming Forest as areas eligible for silvicultural activities.

All of the site preparation, artificial regeneration and tending activities inspected by the Audit Team were found to be of good quality. The Audit Team did find some rutting on a

couple of lowland sites and have made a recommendation to address this. The quality of watercrossings on the Forest was generally very good, although the Audit Team has identified that a potential issue associated with culvert length needs additional consideration. This is addressed through a recommendation.

Compliance and Monitoring

There was a relatively low level of non-compliance reported on the forest and there were no systemic issues related to non-compliances. The non-compliance rates reported by the MNR and the industry were similar indicating comparable perceptions of compliance and non-compliance. The level of compliance monitoring undertaken by industry was good, but the Audit Team noted that the level of monitoring undertaken by the MNR has fallen off and should be increased to be consistent with their intended role in monitoring.

Overall Conclusion

The Audit Team believes that, for the period under review, the ShiningTree Forest was managed in substantial compliance with the laws, licences and Forest Management Plan in effect. The Audit Team concludes that, for the period under review, the ShiningTree Forest was managed within the bounds of sustainability as defined by the MNR and as outlined in the IFAPP.

Key factors entering into the Audit Team's conclusion regarding management of the Forest include:

- The Forest was managed in adherence to the required forest management guides and manuals;
- The harvest and regeneration are in balance and there is no overharvesting on the Forest, judging from the available data and observations made during our site inspection;
- The good performance of the company in implementing an appropriate silviculture program;
- The fulfillment of the goals and objectives of the 2001 FMP;
- The existence and implementation of well-considered AOC prescriptions which protect the non-timber values of the forest;
- The excellent performance of the GACC in providing input into the forest management process;
- Adherence to the conditions of the SFL; and
- The very high level of commitment and professionalism demonstrated by the company and its staff.

Table 15 lists the recommendations and suggestions identified in this audit.

Table 15. Recommendations and suggestions made in this audit.

Principle: Commitment
No Recommendations or Suggestions
Principle: Public Participation
No Recommendations or Suggestions
Principle: Forest Management Planning
Suggestions: None **Recommendations:** 1. That MNR complete the Memorandum of Understanding regarding Roles and Responsibilities for the Administration of the Timiskaming Forest by April 1, 2007. 2. That by April 1, 2007 MNR, in consultation with the Company, review the quality of the values information in the NRVIS database for the Forest, and that MNR revise the database so that it accurately reflects knowledge of existing values and ensure that the data are maintained consistent with the direction in the Forest Information Manual. 3. That MNR conduct site inspections of values reported by the Company within the two-working-days of receiving the information if the value may be negatively affected by current forest operations. 4. That Corporate MNR provide values funding sufficient to meet the agency's responsibilities related to FMP planning requirements, and that funding also be provided on an annual basis sufficient to collect information for the entire year's allocations. 5. That, by Sept. 1, 2007 MNR (Timmins District) evaluate the Thermal Regime Estimation Process developed by TFAI and identify circumstances in which it could be improved. 6. That the MNR provide a decision regarding complete amendment requests within 15 days, as identified in the FMPM. In addition, MNR should track the amount of time necessary to accommodate incomplete amendment requests and the need to incorporate aboriginal consultation into amendment decisions. 7. That MNR complete its review of Annual Work Schedules within the 30 day period identified by the FMPM.
Principle: Plan Implementation
Suggestions: 1. TFAI should consider no harvesting as a management option for tolerant hardwood stands on a case-by-case basis. 2. MNR should consider allowing TFAI to conduct slash pile burning in the fall prior to October 1, when conditions are favourable.

3. The Company and MNR should continue their efforts in communicating the goals and effects of herbicide use with the public.

Recommendations:

8. That MNR ensure that the operator's camp at Block 308 is either removed or rehabilitated and appropriately authorized.

9. That the Company take measures to ensure that operators on sensitive sites avoid site damage.

10. That TFAI conduct additional supervision of harvesting operations conducted on lowland sites during the 2006-2011 FMP period, and if necessary take steps to ensure that training of operators is adequate to ensure proper implementation of SGR requirements for natural regeneration of these areas.

11. That the Company and MNR review existing water crossings on the Forest and identify the extent to which inadequate culvert installations exist. Should the results warrant, the Company is to review its installation procedures to ensure that the means used to install culverts meets relevant standards.

12. That the MNR and the Company identify and address the impediments to a better working relationship.

Principle: Systems Support

Suggestions:
None

Recommendations:
13. That the Company and MNR develop a system for accurately tracking milestone dates associated with the submission, review and approval of forest management planning documents.

Principle: Monitoring

Suggestions:
None

Recommendations:
14. That MNR increase the level of its compliance monitoring activities on the Forest.

15. That the MNR and the Company finalize the status of the 2004-05 annual report and if required, submit it to the Forest Information Portal.

16. That the Company provide complete, accurate and timely annual report submissions. The Company should also ensure that its responses to MNR reviews are comprehensive and timely.

17. That MNR complete annual report reviews consistently according to the schedule identified in the FMPM.

Principle: Achievement of Management Objectives and Forest Sustainability

No Recommendations or Suggestions

Principle: Licence Obligations

Suggestion:
None

Recommendations:

18. That TFAI conduct an analysis of its free-to-grow information, and silvicultural effectiveness monitoring information, where appropriate, for the preparation of the next FMP.

19. That MNR and the Company submit the status report on the implementation of this audit's recommendations on time – two years after approval of the Action Plan identifying how the recommendations will be addressed.

Conclusion

The Audit Team believes that the management of the ShiningTree Forest was in substantial compliance with the laws, licences and Forest Management Plan in effect during the audit period. The Audit Team concludes that for the period under review, the ShiningTree Forest was managed within the bounds of sustainability as defined by the MNR.

Appendix A: Trend Analysis

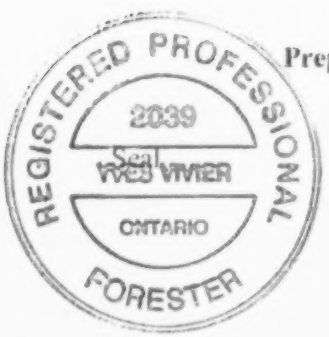
This appendix was been prepared by TFAI Inc.

2001 - 2006 INDEPENDENT FOREST AUDIT

FOR THE

SHININGTREE FOREST

Comparison and Trend Analysis of Planned vs. Actual Forest Operations Report



Prepared by:

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1.0 INTRODUCTION

As detailed in Section 1.0 of the 2006 Independent Forest Audit Process and Protocol, the purpose of the independent forest audit is to assess:

- to what extent forest management planning activities comply with the Forest Management Planning Manual and the Act;
- assess to what extent forest management activities comply with the Act and with the forest management plans, the manuals approved under the Act and the applicable guides;
- assess the effectiveness of forest management activities in meeting the forest management objectives set out in the forest management plan, as measured in relation to the criteria established for the audit;
- compare the forest management activities carried out with those that were planned;
- assess the effectiveness of any action plans implemented to remedy shortcomings revealed by previous audit, and
- review and assess a licensee's compliance with the terms and conditions of the forest resources licence.

The *Comparison and Trend Analysis of Planned vs. Actual Forest Operations Report* for the ShiningTree Forest has been prepared for the 2006 Independent Forest Audit as per the requirements of the 2006 Independent Forest Audit Process and Protocol (OMNR, Feb. 2006). This report documents the forest management activities on the forest for the audit period starting April 1st, 2001 to March 31st, 2006 as well as for a defined period that precedes the audit period.

Since 1986, the independent forest audit periods coincided with the forest management plan (FMP) planning horizons of the ShiningTree Forest (STF). This audit period is no different and corresponds to the 2001 to 2006 ShiningTree Forest FMP. The 2001 to 2006 STF FMP was prepared and submitted by Domtar Inc. acting as agent for ShiningTree Forest Inc. In September of 2003, in anticipation of the ShiningTree Forest amalgamation into the Timiskaming Forest for the 2006 to 2011 FMP, the Timiskaming Forest Alliance Inc. (TFAI) assumed all forest management responsibilities as agent for ShiningTree Forest Inc. (STFI).

For the purposes of forest management, the amalgamation was completed on April 1st, 2006 and forest management activity trends tracked on the ShiningTree Forest since 1986 will be combined with those on the Timiskaming Forest and shown in the 2009 independent forest audit (IFA) for the amalgamated Timiskaming Forest. Thus, this report will serve and form part of the historical documentation of forest management activities that took place since its inception.

This trend analysis corresponds to 4 five-year terms starting in 1986 and ending in 2006. The 2001 to 2006 period is identified in all tables as the "current year" and coincides to the 2001 to 2006 FMP. The preparation of this report encompasses all annual reports for this period reflecting the Year 10 annual report requirement of the 2004 FMPM submitted to

MNR on November 15, 2006. Actual volume utilized to date (Table 3) is based on MNR TREES data received on September 11th, 2006. Future updates to these volumes will be reflected in table AR-4 and appended to the Year 10 annual report as they are made available. Harvest area and volume (Table 3 and Table 4) were annualized while Table 6 shows actual achievement to date.

The previous five-year period (1996-2001) coincides with the 1996-2001 FMP prepared by the Ontario Ministry of Natural Resources (OMNR) and implemented by both OMNR and the recently formed STFI. The Report of Past Forest Operations for this period was complete and available as a source of information to this analysis.

The 1991 to 1996 period corresponds to the first five-year period of a 20-year Timber Management Plan approved February 26, 1991. All annual reports for the respective 5-year period were complete and available as sources of information to this analysis.

In an attempt to maintaining consistency in reporting, information from the 1986 to 1991 period was sourced from the *2001 STF IFA Comparison and Trend Analysis of Planned vs. Actual Forest Operations*. The period coincides with the MNR approved 20 year Management Plan for the period starting April 1971 to March 1991 and MNR approved Operating Plan for the period of April 1st, 1981 to March 31st, 1991. All annual reports for the period of April 1st, 1986 to March 31st, 1991 were complete and available during the preparation of the 2001 STF IFA trend analysis report.

Timber Management Plans up to and including the 1986 to 1991 operating plan (which was part of the second ten-year term for the 1971 to 1991 period) were based on the 1972 forest resource inventory (FRI), created using 1970 photography. In 1986 new photography was taken and used to complete the 1991 to 1996, 1996 to 2001 and 2001 to 2006 management plans. More recently, the 1986 FRI was also used to complete the 2006 Timiskaming Forest FMP.

The following table is intended as a summary and reference to the information discussed above.

Table A. Summary of historical developments for STF TMP's or FMP's by plan terms.

	1986-1991	1991-1996	1996-2001	2001-2006
TMP or FMP	TMP	TMP	FMP	FMP
Year of FRI	1972	1986	1986	1986
FMP Prepared	OMNR	OMNR	OMNR	STFI
FMP Implemented	OMNR	OMNR	OMNR /STFI	STFI
Source of Information	2001 STF IFA Trend Analysis	RPFO, AR	RPFO, AR	2001-2005 AR

2.0 SUMMARY OF TOTAL AREA UNDER MANAGEMENT

Table 1 summarizes the total area under management for the former ShiningTree Forest management unit. The source data for these tables are TMPM tables 4.8.2 and FMPM Table FMP-1 and FMP-2. As shown in Table 1, the production forest has remained relatively stable between 1986 and 2001. However, a slight difference (1.3%) is observed between the total production forests in 2001 to 2006 from the previous planning period of 1996 to 2001. Changes to the total production forest between these two periods can be as a result of the migration from stanf (stand level forest description database) non GIS-based aspatial information to GIS-based digital inventory, unregulated Ontario Living Legacy area's (now regulated), unknown digital Provincial Park boundaries and changes in land classifications such as patent land. As referenced in section 2.2 of the 2001-2021 STF FMP, large portions of information such as the La Motte Lake Provincial Park and some patent land were missing from the FRI description. An exact boundary for La Motte Lake Provincial Park was not available during FMP development and had not been hard coded in the FRI. However, the FMP does state that an unofficial boundary was available and that area was manually incorporated into all summaries and analysis for the development of this FMP including the Strategic Forest Management Model (SFMM). These issues were recognized during the development of the 2006-2026 Timiskaming FMP and any updates required to the FRI have been addressed and included in the amalgamated planning inventory.

Another notable difference is the percentage of production forest found in Barren & Scattered (B&S) and/or depleted area between 1991 and 2006. The 2001 trend analysis suggests that very little, if any, depleted area that may have been successfully regenerated was included in those landbase updates for the 1991 and 1996 plans. During the 1991-1996 period, 9.8% of the production forest was classified as B&S. In the following period from 1996 to 2001 this area climbed to 13% of the production forest. The 1991 to 1996 report of past forest operations (RPFO) explains that due to government expenditure control measures, there was limited funding available to carry out silvicultural programs and assessment programs. In 1997, under the management of ShiningTree Forest Inc. and with access to the *Crown Forest Sustainability Act* (CFSA) regulated forest renewal trust fund, more resources were made available to complete all previously forecasted free growing assessments. These areas were reintroduced into regular production forest which reduced the current B&S/NSR and depleted area to an acceptable 8.44% of the production forest. The reduction in production forest for species such as jack pine and poplar between 1991-1996 and 1996-2001 plan terms can also be rationalized by the reduction in silvicultural effort and backlog survey work. Section 8.0 describes the XYZ and Backlog area remaining on the STF as a result of silviculture efforts put forward in recent plan terms.

Prior to the current period (2001-2006), most working groups were in a downward trend compared to 1986 levels. With the exception of Balsam Fir and White Birch working groups, the current period in Table 1 shows all working groups moving increasingly closer to 1986 levels. Although there have been concerns at the provincial level that the spruce working group is in decline, it has increased by 4% from the 1996 to 2001 period. However, it remains 5% lower than the 1986 to 1991 period.

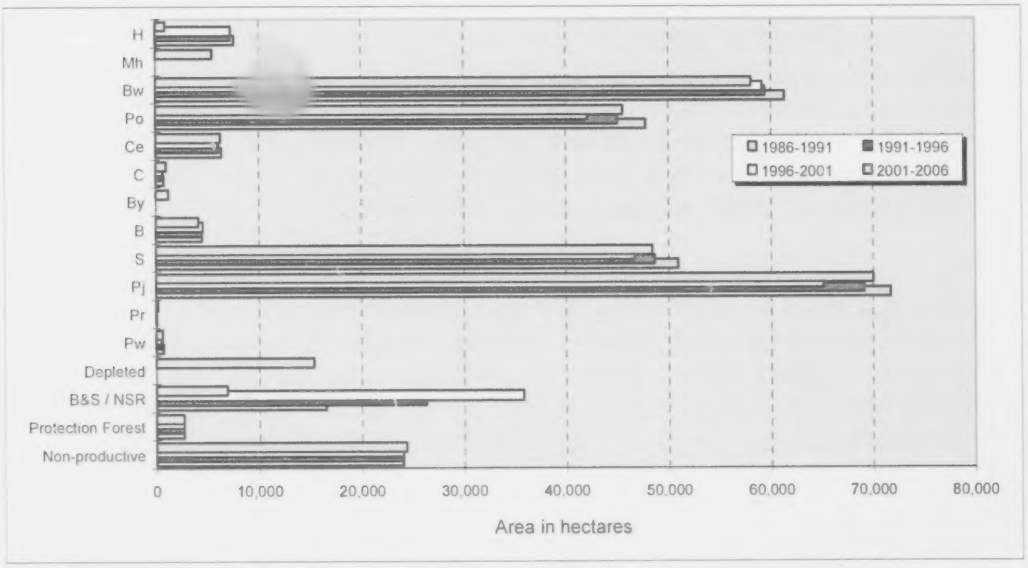
The steady decline in balsam fir and white birch working group is due primarily to management decisions established in past TMP's and FMP's. As referenced in the TMP's and FMP's, many of the birch stands often have higher conifer components than what is identified in the FRI. These sites are also associated with remnant fire scared white pine "lone soldiers" scattered throughout the stands. The apparent decrease in hardwood (H) in Table 1 results from a separation of the yellow birch and hard maple. Collectively, the hardwood component is slightly increasing from the previous period. The decrease in balsam fir forest area is partially due to aggressive silviculture on those balsam fir dominated sites affected by spruce budworm infestation and the continual improvement of harvesting practices to ensure the renewal of preferred species consistent with the silvicultural ground rules.

2006 Independent Forest Audit
Table 1 - Summary of Total Area Under Management

MU: ShiningTree Forest

Past and Current Plans - Crown Managed

Land Type		Plan Term	Area in hectares: Past Plans 1986-1991	Past Plans 1991-1996	Past Plans 1996-2001	Current 2001-2006
Non-Forested						
Other Land			31,238	31,272	31,272	28,586
Forested						
Non-productive			24,049	24,049	24,049	24,385
Productive						
Protection			2,741	2,701	2,700	2,707
Production Forest						
	B&S / NSR		16,574	26,337	35,846	6,953
	Depleted		-	-	-	15,373
	Forest Stands by Working Group					
	Pw		723	639	490	645
	Pr		40	70	70	145
	Pj		71,752	69,166	65,165	70,061
	S		50,951	48,679	46,671	48,415
	B		4,529	4,532	4,554	4,175
	By		-	-	-	1,274
	C		817	699	698	1,011
	Ce		6,440	6,143	6,021	6,305
	Po		47,835	45,064	42,107	45,564
	Bw		61,389	59,456	59,164	58,094
	Mh		-	-	-	5,527
	H		7,664	7,322	7,322	959
Total Production Forest			268,714	268,107	268,108	264,501
Total Forested Land			295,504	294,857	294,857	291,593



Source: FMPM Table FMP-1, FMP-2
TMPM Table 4.8.2

3.0 DESCRIPTION OF FOREST UNITS

There has been a considerable evolution of forest units over the trend analysis period. Starting in 1986 and up to 1996, forest units were based entirely on FRI working group codes. Some grouping of species (i.e. Cedar, Larch and white or red pine into Other Conifer) occurred however the management intention for these groupings was determined by the amount of area in these working groups and not on expected yield or silvicultural response. During this era, the focus on timber management and the provision of forest products allowed these aggregations. A change in forest management direction was formalized with the passing of the Crown Forest Sustainability Act (CFSA) and the focus of forest management in Ontario shifted from being based primarily on the provision of timber products to an ecosystem based approach that considers other forest values and non-timber resources such as wildlife habitat, old growth and forest diversity. In the mid to late 1990's, forest practitioners began to utilize the FRI to aggregate stands into forest units based on both cover type and silvicultural response. The intent was to aggregate the FRI into forest units that more closely resemble the regional Forest Ecosystem Classification (FEC) types that had been developed.

The information documented in Table 2a was sourced from the 1981 to1991 operating plan. The forest units documented into this plan were primarily working group with minor variations. The OC and OH forest units represent aggregations of working groups. Specifically, the OC forest unit includes stands from the Ce, La, Pr and Pw working groups. The OH forest unit includes stands from the Bw, By or Oh working groups. The silvicultural systems shown in Table 2 originated from the "Silvicultural Prescriptions and Stocking Standards" located in the TMP. They were prescribed for each original working group.

Table 2b documents five forest units developed for the purposes of allowable cut calculations in the 1991-1996 TMP. These five forest units were strictly working groups with two notable differences. The jack pine forest unit was separated into two categories based on site quality and in the case of the white birch it was separated from the OH forest unit from the previous period and captured as a working group. The silvicultural systems shown in Table 2b were prescribed for each working group as well shelterwood and clearcut systems were introduced for white and red pine working group stands.

Table 2c was sourced from the 1996 to 2001 FMP. During this period a refinement of forest units was initiated in the province. Although for the most part forest units were still based primarily on working group, an effort was made to refine them by considering ecosystem aggregation, wildlife habitat, operational conditions at the stand level and consideration for future forest products requirement. A few changes worth noting is the distinction between white and black spruce previously aggregated with the spruce working group and the creation of the mixedwood to characterizes differences in site quality, ecosystem and silvics.

In 2001, more refined and highly differentiated forest units were developed and implemented. These forest units were based on the Northeast Standard Forest Units with the intent to capture unique condition on the ground incorporating forest cover, substrate and other ecological processes. Some management units have modified the standard forest units

to capture the local variability in forest cover and/or address management objectives. Concurrent to these changes was the availability of growth and yield information, successional pathway information and links to regional habitat units that supported forest modeling efforts. Information presented in Table 2d was sourced from the current period, which is 2001 to 2006.

The adaptation of forest units from a standardized working group to those based on forest types has led to a number of issues. Forest units are very dissimilar and have led to challenges in tracking forest management changes over time. For example, the current MW2 forest unit in the 2001 forest management plan captures stands formerly aggregated in the Spruce (white and black), Poplar, White Birch, Balsam Fir, Other Conifer and Other Harwood working groups and in some cases white and red pine. Recently, a trend towards regionally supported standardized forest units and provincial forest types with a more direct association to regional Habitat Units has resulted in easier comparisons across a sub-regional and regional area and allows for more effective "rolling up" of forest management data from the unit level to regional and provincial levels. It is certain that this ongoing adjustment of forest descriptors will continue well into the future given the continuous pursuit to improve our ability to aggregate data without compromising its usefulness for analysis. However, the source data will continue to be the limiting factor in achieving meaningful data aggregation.

In the development of the 2006 Timiskaming Forest management plan, previous forest units from both management units were reviewed with the planning team and regional analyst. These were compared with the Northeast Standard Forest Units, grouped based on historical characteristics, documented and accompanied by rationale. A matrix was developed and included in the 2006 FMP as a record of the historical changes to the amalgamation of these two forests. This matrix can be referenced in Appendix 11-1 of the 2006-2026 Timiskaming FMP and serve as the starting point and future understanding of past management decisions as well as to be used for reference in the completion of subsequent trend analysis.

2006 Independent Forest Audit
Table 2a - DESCRIPTION OF FOREST UNITS (FMP-8)

MU: ShiningTree Forest
Plan Term: 1986-1991

Forest Unit		Forest Type	Main Working Group	Site Type(s)	Silvicultural System	FRI Parameters & Criteria	Additional Information
Code	Name						
Pj	Jack Pine		Pj	na	Clearcut	wg=pj	Rotation Age = 70
Sp	Spruce		sp	na	Clearcut/Seed Tree	wg = sp (sb & sw)	Rotation Age = 100
B	Balsam Fir		bf	na	Clearcut	wg = bfwg = bfwg = bfwg = bf	Rotation Age = 60
OC	Other Conifer		oc	na	SeedTree	wg = oc (ce & la) or pr or pw	Rotation Age = 100
Po	Poplar		po	na	Clearcut	wg = po	Rotation Age = 60
Oh	Other hardwoods		bw	na	Clearcut, SeedTree,Shelter W	wg = bw or by or oh	Rotation Age = 60

Source: TMPM Table 4.11

2006 Independent Forest Audit
Table 2b - DESCRIPTION OF FOREST UNITS (FMP-8)

MU: ShiningTree Forest
Plan Term: 1991-1996

Forest Unit		Forest	Main	Site	Silvicultural	FRI Parameters	Additional
Code	Name	Type	Working Group	Type(s)	System	& Criteria	Information
PjX&1	Jack Pine	Pj WG stands	pj	na	Clearcut	wg = pj & sc=X or 1	Rotation age = 70
Pj2&3	Jack Pine	Pj WG stands	pj	na	Clearcut	wg = pj & sc=2 or 3	Rotation age = 75
Sp	Spruce	Sp WG stands	sb,sw	na	Clearcut	wg = sb or sw	Rotation age = 100
Po	Poplar	Po WG stands	po	na	Clearcut	wg = po	Rotation age = 60
Bw	White Birch	Bw WG stands	bw	na	Clearcut	wg = bw	Rotation age = 80
	White Pine WG		pw	na	ShelterW, Clearcut	wg = pw	
	Red Pine WG		pr	na	ShelterW, Clearcut	wg = pr	
	Balsam Fir WG		bf	na	Clearcut	wg = bf	
	Cedar WG		ce	na	Clearcut	wg = ce	
	Larch WG		la	na	Clearcut	wg = la	
	Other Conifer WG		oc	na	Clearcut	wg = oc	
	Black Ash WG		ab	na	Clearcut	wg = ab	
	Hard Maple WG		mh	na	Clearcut, SeedTree	wg = mh	
	Sogt Maple WG		ms	na	Clearcut	wg = mswg = mswg = ms	
	Yellow Birch WG		by	na	Clearcut, SeedTree	wg = by	

Source: TMPM Table 4.11

2006 Independent Forest Audit
Table 2c - DESCRIPTION OF FOREST UNITS (FMP-8)

MU: ShiningTree Forest
Plan Term: 1996-2001

Forest Unit		Forest	Main	Site	Silvicultural	FRI Parameters	Additional
Code	Name	Type	Working Group	Type(s)	System	& Criteria	Information
PW/PR	White and Red Pine	white and red pine stands	pw,pr, bw	na	ShelterW, SeedTree	pw + pr>=40%	Rotation age = 100
PJ	Jack Pine	jack pine dominated conifer stands	pj	na	Clearcut	wg = pj and conifer > 70%	Rotation age = 70
SB	Black Spruce	black spruce dominated conifer stands	sb	na	Clearcut	wg = sb and conifer > 70%	Rotation age = 100
PO	Poplar	poplar dominated hardwood stands	po	na	Clearcut	wg = po and hardwood > 70%	Rotation age = 60
BW	White Birch	white birch dominated hardwood stands	bw	na	Clearcut	wg = bw and hardwood > 70%	Rotation age 70
OC	Other Conifer	cedar or larch stands - typically lowland	ce	na	Clearcut	wg = ce or wg = la	Rotation age = 80
OH	Other Hardwood	maple, yellow birch, ash, etc	mh,by,ms	na	Clearcut, ShelterW, SeedTree	wg = mh or wg = ms or wg = ab or wg = by	Rotation age = 90
MW	Mixedwood	mixed species stands, hardwood = conifer	bw, po, pj, sp, bf	na	Clearcutq	(hardwood<=60% and conifer<=60%)	Rotation age = 75

Source: TMPM Table 4.11
FMPM Table FMP-8

2006 Independent Forest Audit
Table 2d - DESCRIPTION OF FOREST UNITS (FMP-8)

MU: ShiningTree Forest
Plan Term: April 1, 2001 to March 31, 2006

Forest Unit		Forest	Main	Site	Silvicultural	FRI Parameters	Additional
Code	Name	Type	Working Group	Type(s)	System	& Criteria	Information
PR1	RED PINE	Conifer	Red Pine - 100%	ES - 19	Clearcut	pr>=0.7	Pr10,219ha,SC 1,Stk 0.7
PW1	PW MIXCON	Conifer	White Pine - 93% White Birch - 7%	ES-19 20,21	Shelterwood OR Clearcut	pw+pr+sw+he>=0.4 and pw>=0.3	Pw5Sw1Ce1Bf1Bw1Po1 748 ha,SC 2,Stk 0.54
PRW	Pr & PW	Conifer	Red Pine - 100%	ES - 19	Shelterwood OR	pw+pr>=0.4	Pr4Sbb3Pj1Bf1La1
TH1	TOL HWDS	Hardwood	Hard Maple - 50% White Birch - 26% Yellow Birch - 12% Soft Maple - 9%	ES - 17,15,16 9r,1r,3,20,6c, 13r,7m	Shelterwood	1h+mh+uh>=0.3	Mh4Bw3By1Ms1Swt 9,961 ha,SC 2.6,Stk 0.83
SB1	SB LOWLND	Conifer	Black Spruce - 100%	ES - 8,4,11,14, 13r,5m,6c,12	Clearcut	sb>=0.8 and mh+uh+pr=0.0 and pw+pj<=0.1	Sb9Bf1 13,387ha,SC 1.5,Stk 0.65
PJ1	JACK PINE	Conifer	Jack Pine - 100%	ES - 2,4,1p	Clearcut	pj>=0.7 and po+bw+mh+ uh+1h<=0.2	Pj9Po1 44,361 ha ,SC 1.7 Stk 0.94
LC1	LOWLND CON	Conifer	Black Spruce - 57% Cedar - 38% Larch - 5%	ES - 13r,9r,14, 12,8,4,6c,5m	Clearcut	(ce+la+sb>=0.8 and mh+ uh+pr=0.0 and pw+pj<=0.1)	Sb5Ce4La1 10,602 ha ,SC2.1,Stk 0.65
PJ2	PJ MXCON	Conifer	Jack Pine - 99% Black Spruce 1%	ES - 4,3,6c,13r	Clearcut	(pj+sb+pr>=0.7 or (pj>=0.5 and pj+sb+bf+sw+he+pw+ pr+ce+la>=0.7 and bf+sw+he+pw+ce+la<=0.2) and pj>=sb	Pj6Sb1Bf1Bw1Po1 15,586 ha ,SC1.8,Stk 0.86
SP1	SB MXCON	Conifer	Jack Pine - 13% Poplar - 1% Black Spruce - 86%	ES - 4,8,6c,3, 5m,6,9r,14 13r,12	Clearcut	sb+sw+bf+ce+la+pw+pj+ pr+he>=0.7 and (bf+ce+pw+ la+sw+he<=0.2 or pj>=0.3)	Sb6Pj2Bw1Po1 14,225 ha ,SC 1.3,Stk 0.66
SF1	SPRU FIR CEDR	Conifer	Black Spruce - 50% Balsam Fir - 17% Cedar - 16% White Spruce 15%	ES - 9r,6c,6m, 13r,14,3,7m,1r, 9p,12,8,5m	Clearcut	sb+sw+bf+ce+la+pw+pj+ pr+he>=0.7	Sb3Bf1Sw1Ce1Bw1Po1 14,880 ha ,SC 1.2,Stk 0.64
PO1	POPLAR	Hardwood	Poplar - 100%	ES 7c,7m,6c, 1r,19	Clearcut	po+bw+mh+uh+1h>=0.7 and po>=0.5	Po7Bw1Sb1Pj1 30,355 ha ,SC2.1,Stk 0.89
BW1	BW HARDWOOD	Hardwood	White Birch - 94% Poplar - 6%	ES - 3,7m,7c, 6c,1r,6m,19	Clearcut	po+bw+mh+uh+1h>=0.7	Bw6Po2PjSw1 32,950 ha ,SC 2.3,Stk 0.83
MW1	MXDWD DRY	Mixedwood	Jack Pine - 46% White Birch - 31% Poplar - 22%	ES - 3,6c,4,7m	Clearcut	pj+pr>=0.2	Pj4Bw3Po2Sb1 17,790 ha ,SC 2.1,Stk 0.84
MW2	MXDWD MOIST	Mixedwood	White Birch - 68% Poplar - 16% Black Spruce - 8% White Spruce - 4%	ES - 3,7c,7m, 9r,6c,1r,19,10	Clearcut	fu=°—°	Bw4Po1Bf2Sb1Sw1Ce1 21,953 ha ,SC 2.1,Stk 0.72

4.0 SUMMARY OF PLANNED AND ACTUAL VOLUMES

Table 3 is a Summary of Planned and Actual Harvest Volumes for the former ShiningTree Forest management unit. All volumes have been annualized for the indicated 5 year periods. The current period includes actual volume utilized to date based on MNR TREES data received on September 11th, 2006. As mentioned in Section 1.0 any future updates to volume tables due to extensions (outstanding wood remaining to be scaled past September 11th, 2006) will be reflected in table AR-4 and appended to the Year 10 annual report as they are made available.

Source information for the 1986-1991 period were taken from the 1981 to 1991 operating plan. The information is consistent with the 2001 STF Trend Analysis report which sourced its information from the annual reports. For this period, the total actual harvest volume was 18% higher than the total planned volume. The species that mainly contributed to this increase in actual volume was jack pine at 30% higher than planned volume. The actual harvest volumes for the remaining species were relatively close to their associated planned volumes.

Information for the 1991-1996 period was sourced from the report of past forest operations for the actual volume data and the 1991-2021 Forest Management Plan for the ShiningTree Forest for planned volume data. The total actual harvest volume for this period is also higher than the planned harvest volume by 4%. The jack pine actual harvest volume is 16% higher than the planned harvest volumes while spruce and balsam fir are 37% and 52% higher than the planned volume, respectively. Actual white pine harvest volumes during this period were also higher than the planned harvest volumes by 29%.

The planned volume for the 1996 to 2001 period was sourced from the 1996-2026 ShiningTree Forest Management Plan. The actual harvest volumes were based on the annual reports for the given period. The 1996-2001 ShiningTree Forest Comparison and Trend Analysis of Planned vs Actual Forest Operations Report indicates that the total actual annual volume harvested was 9% lower than the planned volume. The figure was reported under the assumption that the year 5 actual data was not yet available and estimation was used in lieu. With the actual data now available in the annual report for year 5, Table 3 indicates that the total actual volume is 23 % lower then total planned volume for this period. The spruce actual volume is 30% lower than the planned volume while only 14% of the planned balsam fir volume was utilized. Consistent with previous periods, very little birch volume has been harvested with 96% of the planned volume remaining. For poplar, 96% of the planned poplar volume was achieved.

Source information for the "current" period (2001-2006) for planned harvest volumes was taken from the 2001-2006 ShiningTree Forest Management Plan. The actual harvest volumes were taken from the annual reports. As previously mentioned, volumes are based on MNR TREES data received on September 11, 2006 for the preparation of the Year 10 annual report. Any future update due to extensions will be reflected in table AR-4 and appended to the Year 10 annual report. For this current period, the actual harvest volume is 8% lower than the planned harvest volume. Overall, there was an underachievement in

planned volume for all species with the exception of jack pine. The actual jack pine volume was 136% of the planned volume for this period which is directly responsible for improving the total achievement. Most species have achieved above 80% of the planned volume. The exceptions are other conifer, other hardwoods and white birch. In the case of white birch, 45% of the planned volume was harvested. Although not optimal, it does represent a significant improvement on utilization to previous plan terms. A series of amendments to include white birch surplus area back into regular allocation is partially responsible for improving utilization. However, the improvement in utilization is mainly due to increase utilization of white birch destined for oriented strand board (OSB) markets. This trend is projected to continue to improve in the 2006-2011 period.

Since 1986 there is a continual increase in planned volume for the management unit. This occurrence was due to an increase in average age of the forest. In 1986 the average age was approximately 45 years, and this upward trend was predicted in past plans. Prior to 1996, the actual harvest volumes were slightly higher than planned. For the 1996 to 2001 plan term the variability in planned vs. actual volume differences for individual species was significantly higher than all other plan terms. However, for this period, jack pine and poplar volume differences between planned and actual was the 18% and 4% respectively, lower than most other plan terms. Virtually no birch was utilized due to limited markets. Although utilization has shown improvement in the 2001-2006 period, challenges such as market availability and shared prices will continue to be faced in future forest management plans of the amalgamated forest. A comparison of planned vs. actual volumes and planned vs. actual harvest area can be found in Section 5.0.

As noted in past manager's reports for the 2001 audit and in the associated RPFO's, there is a trend in underestimating planned jack pine volumes. This trend was examined during the production of the 2006-2026 Timiskaming Forest Management Plan. The planning team compared actual volumes achieved to planned yield to determine if any significant differences existed. Yields, species composition and age of the previous forest to the amalgamated forest were reviewed. Report of Past Forest Operations, Trend Analysis and 2004 Independent Forest Audit for the Timiskaming Forest suggests that actual volumes after three years of implementation are within 3% of planned volumes. Initial trends from the 2001 to 2004 annual reports on the ShiningTree Forest and past trend analysis and RPFO's would suggest higher actual volumes than planned. In reviewing actual yields between plans over a longer period, 2001 ShiningTree FMP yield curves were consistently lower than the 2001 Timiskaming FMP. While SFMM uses modified mixed species yield curves to calculate strategic or long term harvest levels, non-adjusted local yield tables are used to calculate planned stand volumes. The chronic underestimation of planned jack pine volume can be attributed to the underestimation of species composition and stocking in the FRI. It is suspected that the complexity in photo interpretation of a relatively young forest (i.e. 45 yrs) is partially responsible. There is also data that supports an age and site class disconnect in specific areas of the unit which would significantly underestimate planned volumes. However, limited information has been available in support of this observation. With the completion of the 2006 FMP, it is expected that a new FRI will be produced prior to the next planning cycle which will address these inconsistencies. However, without adjustments

made to the FRI, differences between planned and actual volumes will persist and anticipated.

There is also a trend in overestimating planned hardwood volumes (i.e. poplar and white birch) when compared to actual results. For forest units such as poplar and birch the source of the error is the overestimation of species composition and stocking in the FRI due to the relatively young forest at the time of photo-interpretation. As discussed above, it is a known drawback that has been considered for improving forecasted yield in Strategic Forest Management Plans in this region. Yield curves are adjusted for Strategic Forest Management Model (SFMM) based on actual harvest volumes with input from MNR district staff, MNR regional Growth and Yield specialist, shareholder companies planning staff and TFAI/STFI sampling data. Since adjustments to the mixed species curves used in SFMM have occurred, and are continually refined, the calculation of sustainable harvest levels, with the resulting AHA for each forest unit has been addressed. It is the use of the non-adjusted pure species yield curves, site class cross reference tables and the FRI stand level information that has led to the differences in planned vs. actual volumes recovered from the calculated harvest area. The 2006 Timiskaming FMP details the methodologies utilized to improve forecasted yield in Section 2.3.3.2.2 and Appendix 11 of the 2006 Timiskaming Forest Management Plan.

With the completion of the 2006 FMP it is expected that a new FRI will be produced prior to the next planning cycle and given the increase complexity and information requirements for forest management planning today, this updated information will be well received.

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Table 3 - Summary of Planned & Actual Harvest Volumes

MU: ShiningTree Forest

Planned Annual Harvest Volumes

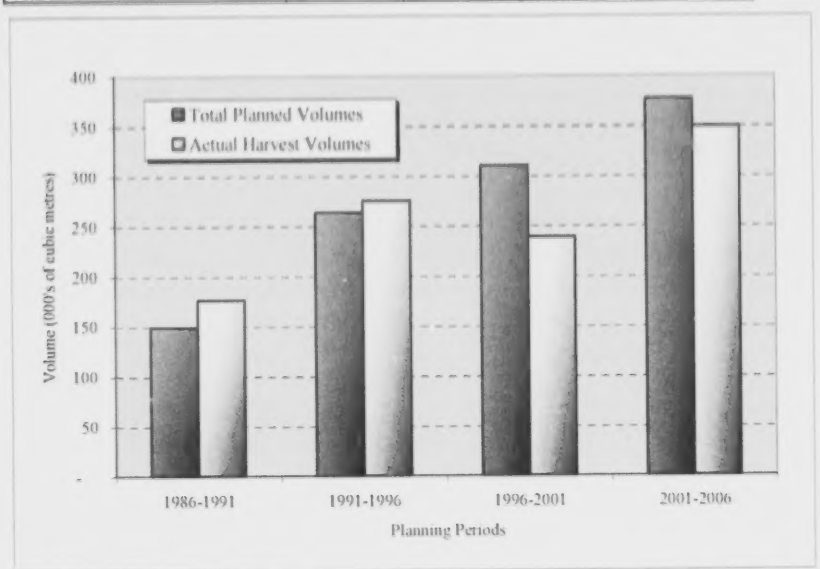
Volumes are Annualized for the indicated 5 year period

	Volume in '000's cubic metres			
	Past Plans			Current
Species	1986-1991	1991-1996	1996-2001	2001-2006
Pj	82.1	121.9	109.6	134.5
Sb	29.0	23.4	46.6	44.9
Sw			12.0	15.7
Bf	1.2	2.5	19.5	8.8
Pw	1.3	0.1	4.9	2.7
Pr	0.1	-	-	
OC	-	1.3	3.0	13.8
Po	32.6	75.7	60.9	94.1
Bw	-	29.4	40.7	54.0
OH	2.8	9.0	12.5	8.6
Total Planned Volumes	149.1	263.3	309.7	377.1

Actual Harvest Volumes

Volumes are Annualized for the indicated 5 year period

	Volume in '000's cubic metres			
	Past Plans			Current
Species	1986-1991	1991-1996	1996-2001	2001-2006
Pj	106.9	141.4	129.8	183.4
Sb	-	55.5	41.2	50.6
Sw	27.8			
Bf	2.1	3.8	2.9	7.7
Pw	5.0	2.8	2.6	2.3
Pr	0.4	0.1	0.1	
OC	0.1	0.4	0.3	1.8
Po	29.8	68.5	58.6	78.8
Bw	3.8	1.4	1.7	24.1
OH	0.2	1.0	1.8	0.3
Total Actual Volumes	176.1	274.9	238.9	349.0



Source: planned: TMPM Table 4.18.1, FMPM Table FMP-21
actual TMPM Table 4.3.1, 1996 FMPM RPFO-4 and annual reports, 2004 FMPM AR-4

5.0 SUMMARY OF PLANNED AND ACTUAL DEPLETION AREA

Table 4 shows the summary of planned and actual depletion area for the former ShiningTree Forest management unit. All harvest areas have been annualized for the indicated 5 year periods. The fifth year data for the "current" period was available and included in this report however, it had not yet been submitted formally for Year 10 annual reporting as part of the 2004 Forest Management Planning Manual (FMPM) requirements during the preparation of this report.

The information for planned and actual harvest area documented in Table 4 for the 1986-1991 period was sourced from the 2001 STF Trend Analysis. As reported, this information was taken from the operating plan and annual reports of this given period. Forty percent of the total planned area was harvested. Specifically, the actual harvest levels for jack pine, black spruce, poplar and other hardwoods were 48%, 31%, 28% and 24% of the respective planned level.

Actual harvest area data for the 1991-1996 period was sourced from the report of past forest operations. The forecast harvest area was sourced from the 1991-2021 Forest Management Plan for the ShiningTree Forest. Sixty-nine percent of the total planned harvest area was actually harvested. Within this period, 88% of the planned jack pine volume and 75% of the planned poplar area was harvested. A total of 65% of the planned harvest area was depleted when combining the black spruce, white spruce and balsam fir. The vast majority of the depleted area was reported as black spruce.

Planned harvest information for the 1996-2001 period was sourced directly from 1996-2026 ShiningTree Forest Management Plan. The actual depleted area originated from the annual reports for this period. During the preparation of the 1996-2001 Trend Analysis report, fifth year data was not available, consequently estimations were used. The information is now available from the annual reports and was included in Table 4. Eighty-five percent of the total planned harvest area was achieved during this period. Specifically, jack pine, black spruce, white and red pine and poplar were all slightly over the planned harvest levels. White spruce and balsam fir grouping, white birch and other hardwoods achieved 56%, 37% and 71% of the planned harvest area, respectively.

For the current period in Table 4 (2001-2006), information was sourced from the annual reports. As it was explained above, the Year 10 annual report data was available but not yet formally submitted as part of the annual reporting requirements. The total actual harvest area was 74.3 % of the planned harvest area for this period. The PJ1, PJ2 forest units were both depleted to 92% of the planned harvested area. Approximately 86% of planned harvest area of the SP1 and PO1 forest units was depleted. The BW1 forest unit achieved 73.8% of its planned harvest area while SB1 and MW2 achieved 43.6% and 46% of the planned harvest area, respectively.

Overall, the planned harvest area steadily decreased for the first three periods. This trend has been reversed in the current period with a 9.6% increase of planned harvest from the previous periods. The increase in annual allowable harvest area can be rationalized by the

modification of yield curves in the 2001-2006 FMP combined with the current age class structure of this relatively young forest. It is difficult to determine any trends by forest unit since they have changed during the trend analysis period. However, some general conclusions can be drawn and discussed. The bypass of species such as white birch, lowland spruce, other hardwoods and to some extent mixedwoods has improved since 1986. Clearly, improvements have been made in area utilization in those pure forest units of economic importance (poplar, jack pine and conifer dominated mixedwood). The utilization of white birch and other hardwoods has also improved and there is optimism that this trend will continue into the future. As mentioned in the previous section, this trend is slowly changing due to developments of a market for birch in OSB. The improved utilization of white birch has also increased the amount of incidental volume of SPF and poplar.

Utilization of spruce dominated forest units has been inconsistent throughout the plan terms of this trend analysis. Lowland spruce sites have had historically high levels of bypass due to poor volume recovery and fluctuating pulp roundwood markets. Traditionally, ShiningTree Forest has had favorable site conditions for harvesting during spring, summer and fall periods. However, many of these black spruce lowland sites are often allocated adjacent to upland conifer indicative of the ShiningTree Forest. As a result, these sites are often bypassed due to economic limitations in harvesting smaller areas during winter. Furthermore, most of the targeted winter operations are taking place on other management units.

Jack pine dominated forest units have been well utilized historically and continue during this last period. Since 1991, there has been an overall achievement of 93% of the planned harvest area of the jack pine forest unit. The relatively pure stands are characterized with flat topography, good access and low levels of bypass, all of which contribute to high utilization. Poplar dominated forest units have shown a steady increase in area utilization and can be attributed to the presence of a favorable market for OSB material.

Table B. Comparison of planned vs. actual harvest area and volume (%)

Plan Terms	1986-1991	1991-1996	1996-2001	2001-2006
Actual vs. Planned volume (%)	118.1	104.4	77.1	92.0
Actual vs. Planned area (%)	39.3	68.7	85.4	74.3

Table B compares the percentage planned and actual harvest volume and area since 1986. The overall trend between 1986 and 2006 shows an increase in overall utilization of the available planned harvest area. There is considerable improvement in the difference between the planned and actual volume harvested and the overall achievement of planned harvest area between these periods. During the 1986-1991 period, the total actual annual harvest volume was 118.1% of the planned level while only 39.3% of the actual annual planned area was harvested. Subsequently, the following periods have drastically improved. The incremental progress can be attributed to improvement of strategic model inputs such as adjustments to yield curves to address inaccuracies in the FRI and refinement of growth and yield

projections as this relatively young forest migrates to older age classes. However, as mentioned in Section 4.0 planned jack pine volume continues to be underestimated, while other forest units of less favorable markets render an underutilization. Undoubtedly, these inaccuracies have clearly impacted on the achievement of planned vs. actual volume and area for all periods. Table B does suggest that a marginal increase in the current period from 1996-2001 between actual vs. planned volume has occurred. Ninety percent of the planned harvest area in the PJ1, PJ2 and SP1 forest unit was achieved. Comparatively for that same period, 103% of the planned SPF volume was achieved. Increased utilization of these forest units with less bypass as well as the selection of operationally appropriate allocations have influenced this trend. As discussed in the previous section, additional refinements to growth and yield data in the 2006 amalgamated FMP are projected to improve the achievement of planned and actual volume and harvest area for the jack pine forest unit and conifer dominated mixedwoods, where chronic overruns have been experienced. It is expected that the utilization of white birch in OSB will increase. Provincial wood supply projections demonstrate a decline in short to medium term wood supply for those economically important species (Po, Pj, Sp), therefore it is expected that the white birch overall utilization continue to trend upwards.

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Table 4 - Summary of Planned & Actual Depletion Area

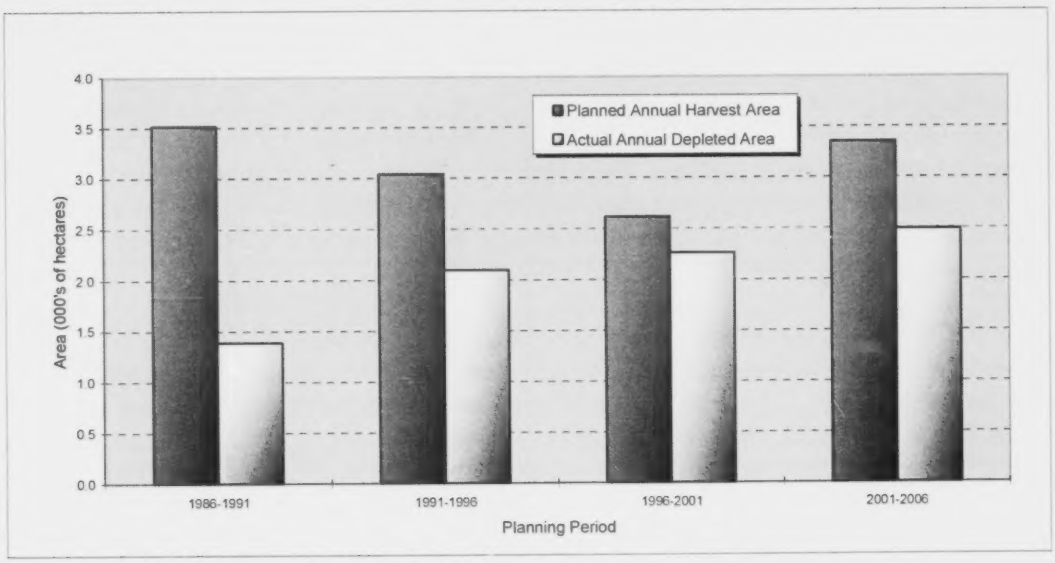
MU: ShiningTree Forest

Past and Current Plans

Area is Annualized for the indicated 5 year period

	Planned Annual Harvest Area				Actual Depletion Area							
	Area in hectares				*Area in hectares*							
Plan Terms	Past Plans			Current	Past Plans						Current	
	1986-1991	1991-1996	1996-2001	2001-2006	1986-1991	1991-1996		1996-2001		2001-2006		
Forest Units					Harvest / Natural	Harvest	Natural	Harvest	Natural	Harvest	Natural	
Pw/Pr	-	9	3		-	14	-	4	-			
Pj	976	983	798		473	869	-	806	-			
Sb	677	524	390		211	357	3	409	3			
Sw	209	28	365		245			206	-			
Bf						-	-		-			
Po	1,037	757	555		294	569	-	560	20			
Bw	-	576	274		-	229	1	101	-			
OC	7	28	33		13	9	-	8	-			
OH	614	135	195		149	43	-	139	-			
PW1				6						0		
SB1				209						91		
PJ1				841						775		
LC1				179						83		
PJ2				103						95		
SP1				106						92		
SF1				165						87		
PO1				552						477		
BW1				812						600		
MW1				119						89		
MW2				181						83		
TH1				80						16		
NPFL				-						5		
Total Area	3,520	3,040	2,614	3,353	1,385	2,091	4	2,233	23	2,492	-	

NOTE: Seperation between Forest Units within a period indicates a Forest Unit Grouping (e.g. actual 91-96 - Sb & Sw FU Grouping)



Source: planned: TMPM Table 4.15, FMPM Table FMP-18
actual: TMPM Table 4.1, 1996 FMPM Table RPFO-2 and annual reports; 2004 FMPM AR-1 and AR-6

6.0 SUMMARY OF MANAGED PRODUCTIVE FOREST BY AGE CLASS

Table 5 shows the summary of managed productive forest by age class. The information to complete Table 5 for the 1986-1991 period was sourced directly from the 1996-2001 trend analysis. For the subsequent periods, 1991-1996, 1996-2001 and 2001-2006 information was sourced from the forest management plans of these respective periods. Since the forest units changed for the 2001-2006 period, comparing them to the previous 15 years presented challenges in describing the changes in the age class distribution by forest unit. Nevertheless there are trends that can be drawn from Table 5 and the associated graphs. It should be noted that the 2006 FMP recognized this issue and included a matrix aimed at mapping the link between forest units in the context of an amalgamation (Appendix 11-1). This will facilitate the future analysis and comparison of forest units.

The ShiningTree Forest is a relatively young forest with the average age in the 61-80 year age class. This is uncharacteristic of many management units in the boreal forest and can be attributed directly to the recent fire history. As shown in Figure 1, the limited availability of overmature forest is due both to fire history as well as to past harvesting strategies that targeted the oldest forest stands. These two factors have also led to an unbalanced age class structure, leaving significantly less area in the 21-40 age classes and disproportionably more area in the 61-80 age class. A significant drop in area follows in the 81-100 year age class with relatively small amounts of area on the landbase in the remaining age classes. Figure 1 also shows very small amounts of area in the 141-160 age class for the 1996-2001 and 2001-2006 periods. Provisions for the retention for older forests were introduced during the 1996-2001 period. Currently, guidelines for the retention of old growth forest and the associated FMP objectives and strategies and targets will ensure the increase in area of these older age classes as some preliminary results can been seen from the incremental changes that have taken place since 1996. As noted in the 2006 FMP, it is challenging to achieve "hard targets" for older forest in the short to medium term given the disturbance history of this forest. The paucity of mature and overmature age classes has led to challenges not only in immediately achieving old growth objectives but also in addressing Marten core area requirements since the amount of suitable habitat on the landbase is less than guideline targets. The positive aspect of this situation is that significant opportunities exist on the landscape to identify the most capable areas and to capture them as cores with the intent of allowing the sites to grow into suitable breeding habitat areas in the future. This management strategy was implemented in the 2001 FMP and was continued in 2006.

The 101-120 and 121-140 age classes have remained relatively stable over the trend analysis period. A modest increase in the 81-100 age class has taken place and has remained stable for the past 10 years. The 0-20 and 21-40 age classes remain relatively stable to the 1996-2001 levels. However, the 21-40 age class has decreased since 1986 and continues to be an issue for future wood supplies. As referenced in the 2006 FMP, the pre-amalgamation age class structures were very similar. This age class gap continues to challenge wood supply achievements in the amalgamated forest in 2006 and a number of scenarios for implementing management strategies to mitigate short to medium term wood supply trends have been adopted.

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Table 5 - SUMMARY OF MANAGED PRODUCTIVE FOREST BY FOREST UNIT (FMP-9)

FMP Period	Forest Units	Age Class	Protection Forest		Production Forest				
					Unavailable		Stage of Management	Available	
			(ha)	(m^3)	(ha)	(m^3)		(ha)	(m^3)
1986-1991	Pw	0-20						34	
		21-40							
		41-60							
		61-80						17	
		81-100						111	
		101-120						406	
		121-140						189	
		141-160							
		161-180							
	Forest Unit Subtotal							757	
	Pr	0-20							
		21-40						40	
		41-60							
		61-80							
		81-100							
		101-120							
		121-140							
		141-160							
		161-180							
	Forest Unit Subtotal							40	
	Pj	0-20						8576	
		21-40						8004	
		41-60						52255	
		61-80						5754	
		81-100						401	
		101-120						186	
		121-140						109	
		141-160							
		161-180							
	Forest Unit Subtotal		25					75285	
	Sb	0-20						10703	
		21-40						3420	
		41-60						17575	
		61-80						14934	
		81-100						5755	
		101-120						4686	
		121-140						1297	
		141-160						70	
		161-180							
	Forest Unit Subtotal		532					58440	
	Sw (includes 724 ha of Sp)	0-20						362	
		21-40						148	
		41-60						1105	
		61-80						1009	
		81-100						101	
		101-120						35	
		121-140							
		141-160							
		161-180							
	Forest Unit Subtotal		7					2760	
	Bf	0-20						65	
		21-40						1128	
		41-60						2206	
		61-80						1058	
		81-100						137	
		101-120							
		121-140							
		141-160							
		161-180							
	Forest Unit Subtotal		20					4594	
	Cc	0-20						155	
		21-40						22	
		41-60						263	
		61-80						1431	
		81-100						2672	
		101-120						1461	
		121-140						502	
		141-160						89	
		161-180							
	Forest Unit Subtotal		417					6595	

	La	0-20						47	
		21-40							
		41-60						55	
		61-80						366	
		81-100						197	
		101-120						66	
		121-140							
		141-160							
		161-180							
		Forest Unit Subtotal	52					731	
	OC	0-20							
		21-40							
		41-60						79	
		61-80						28	
		81-100							
		101-120							
		121-140						17	
		141-160							
		161-180							
		Forest Unit Subtotal	3					124	
	OH	0-20						6	
		21-40						298	
		41-60						1189	
		61-80						1889	
		81-100						1849	
		101-120						1990	
		121-140						337	
		141-160						112	
		161-180							
		Forest Unit Subtotal	119					7670	
	Po	0-20						2048	
		21-40						9953	
		41-60						31129	
		61-80						4783	
		81-100						647	
		101-120						57	
		121-140						53	
		141-160							
		161-180							
		Forest Unit Subtotal	379					48670	
	Bw	0-20						1675	
		21-40						6270	
		41-60						44806	
		61-80						9246	
		81-100						1027	
		101-120						24	
		121-140							
		141-160							
		161-180							
		Forest Unit Subtotal	1187					63048	
		Grand Total	2741	0	0	0	0	268714	0

1991-1996	Pw	0-20						34	
		21-40							
		41-60							
		61-80							
		81-100						105	
		101-120						198	
		121-140						336	
		141-160							
		161-180							
		Forest Unit Subtotal						673	
	Pr	0-20						30	
		21-40						40	
		41-60							
		61-80							
		81-100							
		101-120							
		121-140							
		141-160							
		161-180							
		Forest Unit Subtotal						70	
	Pj	0-20						16820	
		21-40						4732	
		41-60						45936	
		61-80						12624	
		81-100						648	
		101-120						105	
		121-140						246	
		141-160							
		161-180							
		Forest Unit Subtotal	25					81111	
	Sb	0-20						10592	
		21-40						2013	
		41-60						13687	
		61-80						14654	
		81-100						8454	
		101-120						4140	
		121-140						3119	
		141-160							
		161-180							
		Forest Unit Subtotal	511					56659	
	Sw	0-20						813	
		21-40						9	
		41-60						298	
		61-80						1236	
		81-100						105	
		101-120							
		121-140							
		141-160							
		161-180							
		Forest Unit Subtotal	7					2461	
	Bf	0-20						113	
		21-40						621	
		41-60						1816	
		61-80						1910	
		81-100						137	
		101-120							
		121-140							
		141-160							
		161-180							
		Forest Unit Subtotal	20					4597	
	Ce	0-20						135	
		21-40						124	
		41-60						861	
		61-80						2988	
		81-100						1052	
		101-120						1118	
		121-140							
		141-160							
		161-180							
		Forest Unit Subtotal	417					6278	

La	0-20						26	
	21-40							
	41-60						55	
	61-80						121	
	81-100						220	
	101-120						149	
	121-140						21	
	141-160							
	161-180							
	Forest Unit Subtotal	52					592	
OC	0-20							
	21-40							
	41-60							
	61-80						79	
	81-100						28	
	101-120							
	121-140						17	
	141-160							
	161-180							
	Forest Unit Subtotal	3					124	
OH	0-20						252	
	21-40						84	
	41-60						948	
	61-80						875	
	81-100						2728	
	101-120						1506	
	121-140						1181	
	141-160							
	161-180							
	Forest Unit Subtotal	119					7574	
Po	0-20						2400	
	21-40						7171	
	41-60						27425	
	61-80						8138	
	81-100						1620	
	101-120						57	
	121-140						53	
	141-160							
	161-180							
	Forest Unit Subtotal	367					46864	
Bw	0-20						1648	
	21-40						1372	
	41-60						40497	
	61-80						15972	
	81-100						1591	
	101-120							
	121-140						24	
	141-160							
	161-180							
	Forest Unit Subtotal	1180					61104	
	Grand Total	2701	0	0	0		268107	0

1996-2001	Pw	0-20						34		
		21-40								
		41-60								
		61-80								
		81-100						17		
		101-120						149		
		121-140						295		
		141-160						10		
		161-180						19		
		Forest Unit Subtotal						524		
	Pr	0-20						30		
		21-40						40		
		41-60								
		61-80								
		81-100								
		101-120								
		121-140								
		141-160								
		161-180								
		Forest Unit Subtotal						70		
	Pj	0-20						21029		
		21-40						2358		
		41-60						38268		
		61-80						18469		
		81-100						441		
		101-120						54		
		121-140						177		
		141-160						42		
		161-180								
		Forest Unit Subtotal	25					80838		
	Sb	0-20						12353		
		21-40						1497		
		41-60						9321		
		61-80						16398		
		81-100						10098		
		101-120						4588		
		121-140						1944		
		141-160						272		
		161-180								
		181-200						40		
		Forest Unit Subtotal	507					56511		
	Sw	0-20						873		
		21-40						9		
		41-60						198		
		61-80						837		
		81-100						489		
		101-120						63		
		121-140								
		141-160								
		161-180								
		181-200								
		Forest Unit Subtotal	7					2469		
	Bf	0-20						113		
		21-40						371		
		41-60						1330		
		61-80						2265		
		81-100						522		
		101-120								
		121-140						18		
		141-160								
		161-180								
		181-200								
		Forest Unit Subtotal	20					4619		
	Ce	0-20						179		
		21-40								
		41-60						102		
		61-80						505		
		81-100						2666		
		101-120						1528		
		121-140						909		
		141-160						247		
		161-180								
		181-200						27		
		201+						37		
		Forest Unit Subtotal	420					6200		

	La	0-20						30	
		21-40							
		41-60						51	
		61-80						57	
		81-100						285	
		101-120						151	
		121-140						21	
		141-160							
		161-180							
		181-200							
		201+							
		Forest Unit Subtotal	52					595	
	OC	0-20						4	
		21-40							
		41-60							
		61-80						79	
		81-100						28	
		101-120							
		121-140						17	
		141-160							
		161-180							
		181-200							
		201+							
		Forest Unit Subtotal	3					128	
	OH	0-20						252	
		21-40							
		41-60						820	
		61-80						973	
		81-100						2257	
		101-120						1553	
		121-140						1550	
		141-160						78	
		161-180						66	
		181-200						25	
		201+							
		Forest Unit Subtotal	119					7574	
	Po	0-20						5182	
		21-40						3291	
		41-60						26351	
		61-80						10440	
		81-100						1646	
		101-120						124	
		121-140						53	
		141-160							
		161-180							
		181-200							
		201+							
		Forest Unit Subtotal	367					47087	
	Bw	0-20						2599	
		21-40						149	
		41-60						31283	
		61-80						23297	
		81-100						3848	
		101-120						286	
		121-140						31	
		141-160							
		161-180							
		181-200							
		201+							
		Forest Unit Subtotal	1180					61493	
		Grand Total	2700	0	0	0		268108	0

2001-2006	PR1	0-20	0	0	0	0	Com Thin	188	752
		21-40							
		41-60	0	0	9	1395	Com Thin	31	7688
		61-80							
		81-100							
		101-120							
		121-140							
		141-160							
		161-180							
		181-200							
		201+							
	Forest Unit Subtotal		0	0	9	1395		219	8440
	PW1	0-20	0	0	0	0		233	22
		21-40							
		41-60							
		61-80	0	0	15	930		13	806
		81-100	0	0	0	0		51	4845
		101-120	0	0	8	903		103	11658
		121-140	0	0	32	3744		335	39089
		141-160	0	0	34	3870		67	7634
		161-180							
		181-200							
		201+							
	Forest Unit Subtotal		0	0	89	9447		802	64054
	PRW	0-20	0	0	0	0		95	186
		21-40	0	0	0	0		35	2520
		41-60							
		61-80							
		81-100							
		101-120							
		121-140							
		141-160							
		161-180							
		181-200							
		201+							
	Forest Unit Subtotal		0	0	0	0		130	2706
	SB1	0-20	0	0	0	0		6085	0
		21-40	0	0	35	40		297	446
		41-60	0	0	157	520		1745	5964
		61-80	64.1	3333.2	339.9	14335.8		4445	187124
		81-100	49	3463.8	443	30718.2		3539	244524
		101-120	92.8	6816.2	196.2	14452.8		1674	123122
		121-140	70.9	4767.7	192.1	12931.3		1281	85981
		141-160	36.2	2141.6	47.8	2835.4		195	11805
		161-180	0	0	8	432		28	1512
		181-200							
		201+	0	0	0	0		13	481
	Forest Unit Subtotal		313	20522.5	1419	76265.5		19302	660959
	PJ1	0-20	0	0	244	213		12558	30367
		21-40	0	0	129	4758		2467	145985
		41-60	25	2400	1764	210736		13910	1659450
		61-80	0	0	1819	271252		15956	2368537
		81-100	0	0	93	16266		410	71754
		101-120	0	0	11	1980		24	3956
		121-140	0	0	8	648		0	0
		141-160	0	0	0	0		31	454
		161-180							
		181-200							
		201+							
	Forest Unit Subtotal		25	2400	4068	505853		45356	4280503
	LC1	0-20	3	0	12	0		619	0
		21-40	0	0	38	3		327	16
		41-60	0	0	46	250		438	2508
		61-80	0	0	168	6937		1625	69774
		81-100	39	3042	437	32086		3621	265868
		101-120	158	12724	315	25467		1764	142422
		121-140	225	16200	408	30088		1828	134763
		141-160	74	4670	166	11050		496	32944
		161-180	22	1276	2	116		22	1276
		181-200	0	0	15	750		27	1280
		201+	0	0	0	0		38	1444
	Forest Unit Subtotal		521	37912	1607	106747		10805	652295

PJ2	0-20	0	0	167	156		3395	14659
	21-40	0	0	77	1080		1069	23934
	41-60	0	0	577	45114		4163	328126
	61-80	0	0	913	100291		6726	728365
	81-100	0	0	70	9940		153	21646
	101-120	0	0	12	1722		52	7354
	121-140	0	0	0	0		15	920
	141-160	0	0	4	76		13	247
	161-180							
	181-200							
	201+							
	Forest Unit Subtotal	0	0	1820	158379		15586	1125251
SP1	0-20	0	0	45	0		1101	3978
	21-40	0	0	107	1101		887	12244
	41-60	0	0	308	16210		2657	147313
	61-80	0	0	685	60434		6381	556380
	81-100	0	0	396	44742		2218	250944
	101-120	0	0	50	5830		574	67202
	121-140	0	0	58	5316		331	29174
	141-160	0	0	18	1286		76	5513
	161-180							
	181-200							
	201+							
	Forest Unit Subtotal	0	0	1667	134919		14225	1072748
SF1	0-20	7	0	67	0		4025	3719
	21-40	0	0	39	78		498	3912
	41-60	0	0	196	7784		1512	60138
	61-80	19	1178	664	46848		4320	299696
	81-100	0	0	470	45301		3328	317669
	101-120	64	6656	141	14389		956	98384
	121-140	88	6416	159	12441		581	45703
	141-160	0	0	16	928		167	9741
	161-180							
	181-200							
	201+							
	Forest Unit Subtotal	178	14250	1752	127769		15387	838962
PO1	0-20	12	0	76	0		5462	0
	21-40	0	0	35	1666		1104	47109
	41-60	87	9156	1654	169359		13515	1395501
	61-80	161	21223	1674	224134		11907	1592795
	81-100	0	0	176	25906		726	106788
	101-120	0	0	16	1648		111	11433
	121-140	0	0	1	23		52	1196
	141-160							
	161-180							
	181-200							
	201+							
	Forest Unit Subtotal	260	30379	3632	422736		32877	3154822
BW1	0-20	0	0	2	0		2150	0
	21-40	0	0	4	96		13	312
	41-60	220	13308	1096	65544		10658	640378
	61-80	419	34982	2020	165597		19327	1587982
	81-100	0	0	246	24820		2693	272375
	101-120	0	0	7	728		135	14040
	121-140							
	141-160							
	161-180							
	181-200							
	201+							
	Forest Unit Subtotal	639	48290	3375	256785		34976	2515087
MW1	0-20	0	0	89	0		2009	2658
	21-40	0	0	87	2340		1203	38553
	41-60	226	19210	1035	83955		8163	657515
	61-80	78	8268	830	91244		6009	654746
	81-100	0	0	97	13262		383	52346
	101-120	0	0	1	141		13	1833
	121-140	0	0	9	774		10	860
	141-160							
	161-180							
	181-200							
	201+							
	Forest Unit Subtotal	304	27478	2148	191716		17790	1408511

	MW2	0-20	0	0	131	0		2848	624
		21-40	0	0	57	228		486	3124
		41-60	101	4545	619	27030		4642	200354
		61-80	193	13854	1573	114400		10362	765546
		81-100	0	0	520	51075		3223	315225
		101-120	0	0	47	4957		378	39773
		121-140	0	0	21	1764		14	1176
		141-160							
		161-180							
		181-200							
		201+							
		Forest Unit Subtotal	294	18399	2968	199454		21953	1325822
	TH1	0-20	0	0	0	0	Final Removal	46	0
		21-40							
		41-60	0	0	105	2064	Final Removal	940	18080
		61-80	113	3540	250	8316	Final Removal	2976	97068
		61-80	0	0	0	0	Seed Cut	238	14063
		81-100	80	3804	250	12378	Final Removal	2374	118738
		81-100	0	0	0	0	Seed Cut	177	15930
		101-120	0	0	87	5075	Final Removal	897	52274
		101-120	0	0	0	0	Seed Cut	175	17500
		121-140	0	0	158	9155	Final Removal	1796	105105
		141-160	0	0	44	2258	Final Removal	362	18620
		161-180							
		181-200	0	0	1	47	Final Removal	26	1224
		201+							
		Forest Unit Subtotal	193	7344	895	39293		10007	458602
		Grand Total	2727	206974.5	25449	2230758.5		239415	17568762

Source:
TMPM Table 4.8.2, 4.9
FMPM Table FMP-9

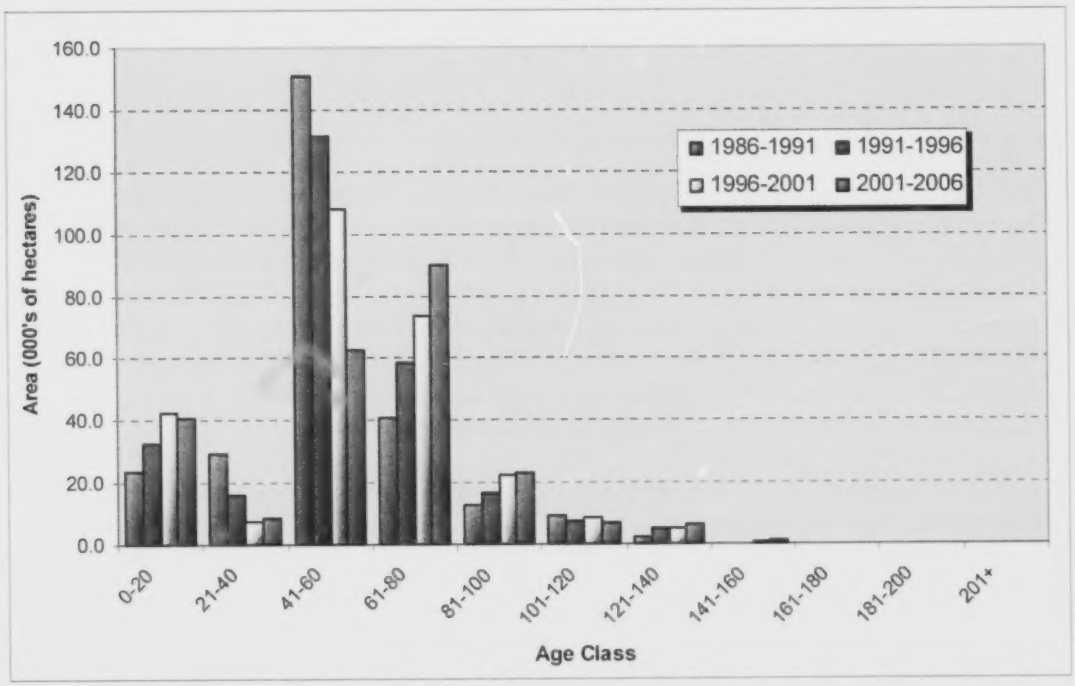

Figure 1. Summary of Managed Crown Production Forest Available by Forest Management Planning Period

7.0 SUMMARY REPORT OF RENEWAL, TENDING AND PROTECTION OPERATIONS

The planned level of renewal activity shown in Table 6 was sourced from either the operating plan (1986-1991), or management plans respective of the 1991-1996, 1996-2001 or the 2001-2006 period. The actual achievements were sourced from the annual reports for the respective periods.

Table C summarizes the percent of actual achievement of different planned renewal activities by forest management plan terms. For most of the former crown management units in Ontario the effect of government fiscal constraints is apparent with the consistent shortfall for achieving actual planned targets. Once the Forest Renewal Trust Funds were implemented with the legislation of the Crown Forest Sustainability Act (CFSA) in 1995, a dedicated source of funding was secured to carry out silvicultural project work. The results are apparent with consistent achievement of planned silvicultural targets immediately starting in the 1996-2001 FMP plan term.

Table C. Percent Actual Achievement of Planned FMP Targets by FMP Terms

Plan Terms	1986-1991	1991-1996	1996-2001	2001-2006
Natural Regeneration	37.73	29.66	36.49	33.90
Artificial Regeneration	111.67	49.32	128.65	118.30
Scarification	70.49	38.09	109.72	118.85
Tending	63.26	29.01	101.27	125.87

Similar to indications in the 1996-2001 Trend Analysis Manager's Report, a chronic underachievement of the planned natural regeneration levels continues to take place. Declaring these sites for natural regeneration is being postponed until such time where the assessment of natural regeneration success has actually occurred. This postponement provides an opportunity to evaluate the natural conifer component prior to declaring the site as naturally regenerated. The data would also suggest that a plausible explanation of the underachievement in natural regeneration is the lag time in assessment work in an attempt to capitalize on natural regeneration of potential mixedwood sites.

Artificial regeneration and site preparation treatments show an overall increase over the 20 year period. The maintenance of renewal activity levels over the 96-06 periods reflect the post CFSA era. Although many were planned, no high complexity prescribed burns have actually materialized during the trend analysis period reflecting a trend of implementing more cost effective methods of preparing sites for regeneration. As well, the company piles and burns slash on all sites, regardless of renewal intensity.

With the exception of the pre-CFSA period, tending activities on the former ShiningTree Forest are consistent with the planned target achievement. Pre-commercial thinning activities were underachieved in the first two plan terms of this trend analysis, however recent thinning levels have increased dramatically and have overachieved planned targets.

The increase in thinning activity reflects efforts to offset future wood supply reductions as well as providing opportunities for local First Nations/First Nations entrepreneurs to develop silvicultural capacity.

Different mechanical site preparation treatments including bracke, passive trencher as well as power trencher have been utilized. Chemical site preparation treatments are increasing as a result of a shift in focus to control competitive vegetation on sites prior to artificial treatments rather than tending afterward. While aerial chemical site preparation is the predominant treatment, ground treatments using an Air Blast Sprayer as well as backpack treatments will be used in the future in an attempt to maintain specific site conditions for mixedwood and shelterwood management. The 2006 FMP acknowledged that effectiveness of ground treatment methods and their usage on the former ShiningTree Forest will increase.

To summarize, prior to the establishment of the CFSA during period of government fiscal constraint, harvesting activities continued while silvicultural backlog accrued. Upon assuming management responsibilities for the landbase, and with dedicated funding available in the Forest Renewal Trust Fund, STFI has pursued an aggressive silvicultural program. The evidence is the successful regeneration of depleted area reported in the past 15 years and discussed in the following section. Additionally, the current objectives and targets in the 2006 FMP demonstrates the company's commitment to sustainable silviculture on the Timiskaming Forest.

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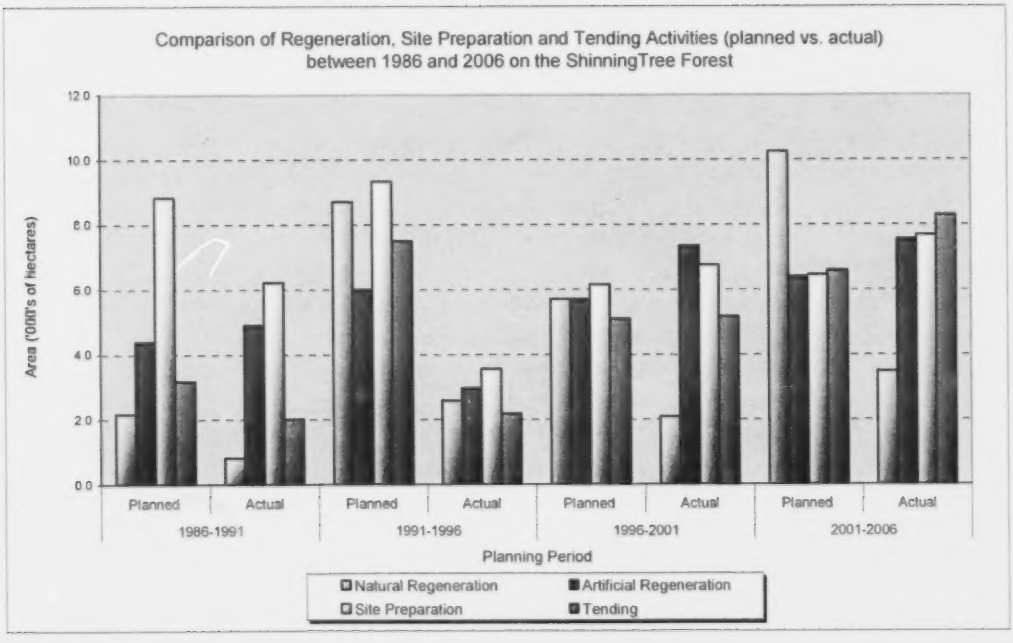
Table 6 - SUMMARY REPORT OF RENEWAL, TENDING AND PROTECTION OPERATIONS

	Area Summary of all Forest Units (ha)							
	Past Plan Term						Current Plan Term	
	1986-1991		1991-1996		1996-2001		2001-2006	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Renewal								
Regeneration								
Uneven-Aged Management								
Selection Cut - Harvest								
Total Uneven-Aged Management								
Even-Aged Management								
Natural Regeneration								
Clearcut	535	690	6,667	2,580	5,270	2,081	10,245	3,474
Strip Cut	100	-	1,349	-	-	-	-	-
Seed Tree Cut	1,425	125	637	-	-	-	-	-
Uniform Shelterwood Seed Cut	100	-	45	-	433	-	-	-
Subtotal Natural	2,160	815	8,698	2,580	5,703	2,081	10,245	3,474
Artificial Regeneration								
Planting	2,808	2,437	3,250	2,321	4,100	5,101	4,403	5,100
Seeding direct	1,500	2,461	2,750	638	-	-	-	-
Seeding with site preparation	-	-	-	-	1,600	2,232	1,984	2,457
Scarification	78	-	-	-	-	-	-	-
Subtotal Artificial	4,386	4,898	6,000	2,959	5,700	7,333	6,387	7,557
Total Even-Aged Management	6,546	5,713	14,698	5,539	11,403	9,414	16,632	11,030
Total Regeneration	6,546	5,713	14,698	5,539	11,403	9,414	16,632	11,030
Site Preparation								
Mechanical	4,130	4,031	5,000	3,552	4,450	5,999	5,978	5,907
Chemical Aerial	2,190	1,410	3,075	-	600	749	473	1,671
Chemical Ground	-	-	-	-	-	-	-	-
Prescribed Burn High Complexity	-	-	-	-	-	-	-	-
Slash Pile Burn	2,500	776	1,250	-	1,100	-	-	89
Total Site Preparation	8,820	6,217	9,325	3,552	6,150	6,748	6,451	7,667
Tending								
Cleaning								
manual	25	32	250	-	500	9	-	-
chemical Ground	363	-	-	-	200	-	473	-
chemical Aerial	2,740	1,925	6,000	2,158	3,900	3,867	5,109	7,018
mechanical	-	-	-	-	-	-	-	-
prescribed burn High Complexity	-	-	-	-	-	-	-	-
Spacing, pre-commercial thinning, improvement cutting								
even-aged	43	49	1,250	18	500	1,289	1,000	1,267
uneven-aged	-	-	-	-	-	-	-	-
Other								
Cultivation	-	-	-	-	-	-	-	-
Planning	-	-	-	-	-	-	-	-
Total Tending	3,171	2,006	7,500	2,176	5,100	5,165	6,582	8,285
Protection (Insect Pest Control)								
accelerated harvest								
salvage								
manual protection								
ground insecticide								
aerial insecticide								
Total Protection								

Source:

planned: TMPM Table 4.19, FMPM Table FMP-25

actual: TMPM Table 4.4, 1996 FMPM Table RPFO-7 and annual reports, 2004 FMPM AR-7



8.0 HARVEST AREA SUCCESSFULLY REGENERATED – SUMMARY OF ALL FOREST UNITS

Table 7 summarizes the harvested and successfully regenerated area for all forest units on the landbase. The instructions for the completion of this table state that the area harvested five years preceding the audit date less ten years must be tracked for regeneration success. The analysis was completed with some variance to the direction from the IFAPP to include additional information available in previous manager's reports.

Although not required, the report includes the 1986-1991 data for Table 7. This information was sourced from the 1996-2001 ShiningTree Forest IFA Trend Analysis. As explained earlier in this report, the data was analyzed from digital inventory database available at the time of preparation of this report. The total harvested area reported in Table 4 is slightly different from the area reported in Table 7 due to the source of information. Table 7 was sourced from the digital inventory while Table 4 originated from the non-digital annual report data generated manually for the 1986-1991 period.

For the 1991-1996 plan term, a total of 10,457 hectares was harvested. The total area surveyed for regeneration success for this period was sourced from the 1996-2001 STF RPFO-8 table. As described in the 1991-1996 STF RPFO, no surveys were conducted during the term to assess regeneration success due to government fiscal expenditure constraints. Under the newly established SFL in 1997 all previous planned free growing assessments were completed and were subsequently reported in the 1996-2001 RPFO plan term. A total of 3,370 hectares was planned for assessment of regeneration success. However, 18,831 hectares was actually surveyed which significantly exceeds the planned level. Although the portion planned for assessment should be reported under the previous plan term, the exact amount of area declared free-to-grow is not known as it was rolled up into the 18,831 ha and is being reported under the 1991-1996 plan term. It is assumed that portion of the area surveyed during this period included XYZ land and/or backlog free-to-grow area originating from MNR projects. Regardless, a total of 14,633 hectares was declared successfully regenerated coinciding with the 1991-1996 plan term.

A total of 11,165 hectares was harvested in the 1996-2001 plan term. The total area surveyed for regeneration success for this period was sourced from the Year 10 annual report of the 2001-2006 STF. To date a total of 12,543 hectares has been assessed. Of the area assessed, 9,421 hectares has been declared successfully regenerated. Any area assessed that was not sufficiently regenerated will either be re-scheduled for a future survey or a silviculture intervention will be scheduled.

The 1996-2001 STF RPFO states that results of surveys conducted on all XYZ lands and 5 to 6 years worth of backlog free-to-grow area originating from MNR projects was summarized in RPFO-9 of this plan term.

The following are the definitions of X, Y, Z and Backlog area:

X Lands: Harvested after April 1, 1995

Y Lands: Harvest pre-1995; SPA (FRTF) funds spent on subsequent renewal

Z Lands: Harvested pre-1995; artificially regenerated without SPA funds; STFI responsible for tending if required, if tending not successful or infeasible then area reclassified as backlog.

Backlog: Class Z lands that were tended but don't meet current FMP SGR requirements as well as pre-1995 harvest areas not declared FTG.

A cross reference exercise between the original XYZ mapped area (hard copy) and the updated digital free-to-grow information was completed to determine the outstanding area of Y, Z and Backlog land requiring further treatment. Table D shows the result of this exercise.

Table D. Status of Y and Z land areas as of July 31, 2006.

Land Classification	Y	Z	Backlog	Total
Original Area (ha)	3,632	451	4,335	8,418
Area Declared FTG	3,196	419	4,261	7,876
Net Outstanding Area	436	32	74	542

The area was reported in the 1996-2001 STF RPFO with the actual area assessed for that period along with backlog area. The net outstanding area which remains is 542 ha, representing 6.4% of the initial levels declared as part of the XYZ land classification. X lands is area harvested after April 1st, 1995 and under the condition of the Sustainable Forest License renewal of these areas is the responsibility of the STFI. In addition, under the condition of the Sustainable Forest License, the company has no silvicultural liability for areas classified as Backlog however TFAI will continue to treat these areas when feasible.

The 2006 Timiskaming Forest Management Plan has detailed silvicultural objectives and renewal targets designed to ensure that the levels of silviculture will continue to support the sustainable harvest levels on the Timiskaming Forest.

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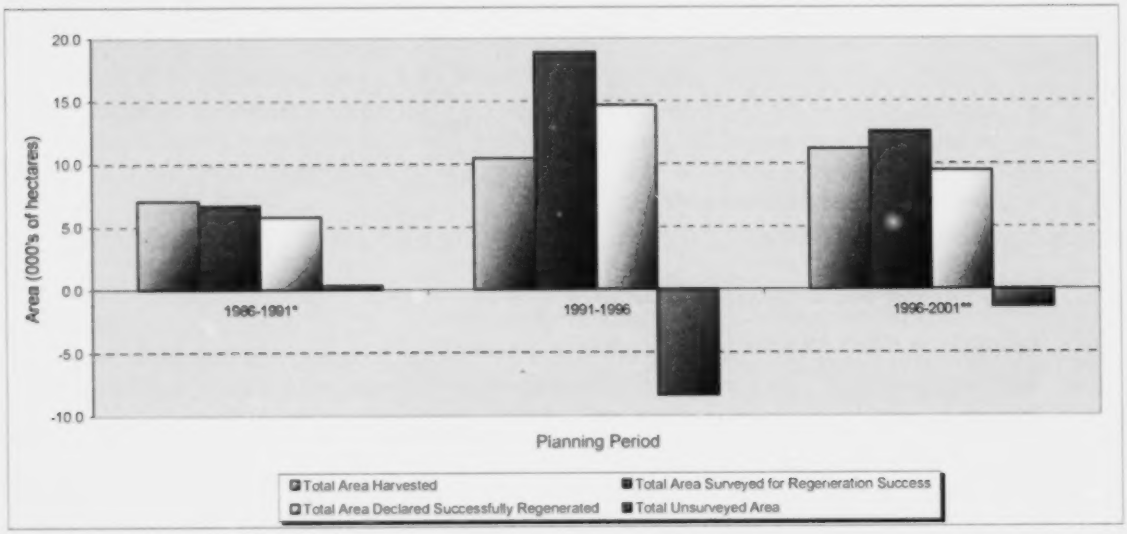
Table 7 - Harvested Area Successfully Regenerated - Summary of All Forest Units

MU: ShiningTree Forest
Period: 1986-1996

	*1986-1991**	*1991-1996*	*1996-2001***
	Even-aged Management	**Even-aged Management**	**Even-aged Management**
Total Area Harvested	7,060	10,457	11,165
Total Area Surveyed for Regeneration Success	6,712	18,831	12,543
Total Unsurveyed Area	348	(8,374)	(1,378)
Total Area Declared Successfully Regenerated	5,771	14,633	9,421
Total Area Surveyed Not Successfully Regenerated	941	-	-
NSR	941	-	-
B&S	-	-	-
Not Available for Regen (eg. Roads & landings)	67	-	-
Other	-	-	-
Percent of Area Surveyed Declared Successfully Regenerated	86.0%	77.7%	75.1%



** Source Data - 1996-2001 STF Trend Analysis*
*** Source Data from AR-14 (Year 10) annual report*

Source:
total area harvested: TMPM Table 4.1, FMPM Table RPFO-2, or annual reports
survey results: TMPM Table 4.7, 1996 FMPM Table RPFO-8, RPFO-9, 2004 FMPM AR-7, AR-14, AR-16 and silviculture records

NOTE: The periods correspond to the Total Area Harvested and not the Harvested Area Successfully Regenerated. The Area Surveyed for Regeneration corresponds to the post 5-year period following the Total Area Harvested period.

Appendix B: Audit Team Members and Qualifications

The IFAPP identified the following qualifications for Audit Teams:

Lead Auditor:

- must have a minimum of 7 years recent and relevant experience in forest management and forest operations, in similar types of forests, preferably in Ontario;
- must be trained in auditing procedures and have current forest auditing experience; and
- ideally is certified as an environmental auditor.

Audit Team:

- minimum of two people with experience in forest management planning and forest operations;
- a minimum of one wildlife biologist and/or ecologist;
- minimum of one person with experience in assessing: socioeconomic profiles and the social and economic impacts which may result from forest management planning decisions; public consultation processes in the context of forest management; and First Nations involvement in forest management planning;
- for each individual, minimum of 7 years recent and relevant experience in forest management and forest operations in similar forest types, preferably in Ontario;
- ideally, some Audit Team members will be certified as environmental auditors;
- at least one member of the Audit Team must have demonstrated experience and/or training in the requirements of the FMPM including the strategic direction and determination of sustainability component;
- at least one member of the Audit Team shall be a Registered Professional Forester; and
- team size is a minimum of three.

The team for this audit, described in Table B - 1 below, included five people in the following positions: Lead Auditor and Harvesting and Modelling Forester, Wildlife and Roads Expert, Silviculturalist, Planning Auditor, and Consultation Auditor.

Table B - 1. The Roles, Responsibilities, and Qualifications of the Audit Team

Name/Company	Role	Responsibilities	Credentials
Mr. Chris Wedeles ArborVitae Environmental Services Ltd.	Lead Auditor, Wildlife and Roads Expert	• overall audit co-ordination; • oversee activities of other team members; • liaise with Company and MNR; • review and inspect Areas of Concern Documentation and Practices; • review and inspect aspects of forest management related to environmental practices and wildlife management integration; • review and inspect access and water crossings.	B.Sc., M.Sc. (Wildlife Biology); 18 years wildlife and forest ecology and experience in Ontario; completed over 20 previous forest audits; certified as an auditor by the Quality Management Institute.
Dr. Jeremy Williams, RPF ArborVitae Environmental Services Ltd.	Harvesting and Modelling Forester	• review and inspect forest harvesting records and practices; • review aspects of forest management related to forest economics and social impacts • reviews FMP modelling inputs and activities	B.Sc.F., Ph.D. (Forest Economics); 18 years consulting experience in Ontario related to forest management, planning, wood supply modelling, and forest economics; participated in 15 previous auditing assignments; certified as an auditor by the Quality Management Institute.
Mr. Rob Arnup, Rob Arnup Consulting	Silviculturist	• review and inspect silvicultural practices and related documentation; • review and inspects selected environmental aspects of forest management	B.Sc. Hons. (Biology). Twenty-two years experience in forest management in Ontario; author or co-author of several silvicultural guides and operational manuals; participated in five previous auditing assignments.
Mr. Mark Fleming, RPF Fleming Forestry Consultants	Planning Auditor	• review FMP and related documents to ensure compliance with FMPM and other regulations	Hon. B.Sc.F., R.P.F. 20 years experience in forest management in Ontario as a consultant, working as a regional OMNR planning specialist, and operations forester with industry; Trained lead auditor for ISO 14001 and Smartwood/FSC .
Dr. David Euler	Consultation Auditor	• review documentation related to forest management consultation processes • Consult with stakeholders, LCC, and First Nations regarding forest management issues	Ph.D. Ecology. Retired Dean of Forestry, Lakehead University, former Wildlife Ecologist with MNR, member Provincial Forest Technical Committee.

Appendix C: Independent Forest Audit Guiding Principles

The IFAPP identifies several components of the audit process. The audit protocol constitutes the main framework for the audit. There are eight principles within the audit protocol (Table C - 1). Each principle contains a series of criteria which, if met, will result in the principle being achieved. For each criterion, a number of procedures are used to assess the auditees compliance and effectiveness.

Table C - 1. The Eight Principles Underlying the Audit Protocol, as noted in the IFAPP.

1. Commitment
Commitment is reflected in vision, mission and policy statements of the Company. Vision and mission statements are intended to provide long-term guidance for the organization. Policy statements reflect how the organization's vision and mission will be achieved. These statements must be reflected in the day-to-day operations of the organization.

2. Public Participation
The process of sustainable forest planning, implementation and monitoring is conducted in an open consultative fashion, with input from all members of the planning team, Local Citizens Committee, native groups, and other parties with an interest in the operations of the forest unit.

3. Forest Management Planning
The forest management planning process involves the input of a number of individuals and groups to describe the current condition of the forest, the values and benefits to be obtained from the forest, the desired condition of the forest in the future, and the best methods to achieve that goal. Certain minimum standards and procedures have been established upon which all management units are evaluated.

4. Plan Implementation
Verification of the actual results of operations in the field compared to the planned operations is required to be able to assess achievement of the plan objectives and compliance with laws and regulations. In conjunction with the review of operations, the reporting tables are tested to ensure accurate results are reported.

5. System Support
System support concerns resources and activities needed to support plan implementation so as to achieve the desired objectives. Appropriate control, documentation and reporting procedures must be in place and operational. Planned action should occur at planned times, in planned places and to the planned degree.

6. Monitoring
The activities and the effects of these activities in achieving management objectives must be regularly measured and assessed. In particular, the indicators of achievement must be assessed and their effectiveness reviewed.

7. Achievement of the Management Objectives and Forest Sustainability
Periodic assessments of the management of the forest unit operations and the forest unit must be made in order to determine whether forest sustainability and other management objectives are being achieved. This includes comparing the actual values of the predetermined indicators against the planned values and assessing the reasons for any significant deviations.

8. Contractual Compliance
The licence must comply with the specific requirements of the SFL.

Appendix D: List of Acronyms

AOC	Area of Concern
AGS	Acceptable Growing Stock
AHA	Available Harvest Area
AR	Annual Report
AWS	Annual Work Schedule
B.Sc.F	Bachelor of Science in Forestry
Bw	White Birch
CFSA	Crown Forest Sustainability Act
CHRIS	Cultural Heritage Resource Information System
Class EA	Class Environmental Assessment for Timber Management on Crown Lands in Ontario
CMU	Crown Management Unit
dbh	Diameter at breast height
EMA	Enhanced Management Area
FIM	Forest Information Manual
FMP	Forest Management Plan
FMPM	Forest Management Planning Manual
FOP	Forest Operations Prescription
FRI	Forest Resource Inventory
FRT	Forest Renewal Trust
FTG	Free-to-Grow
GACC	Gogama Area Citizens Committee
GIS	Geographic Information System
hl	Hectolitres
Hwd	Hardwood
km	kilometres
IFA	Independent Forest Audit
IFAPP	Independent Forest Audit Process and Protocol
LCC	Local Citizens Committee
m^3	cubic meters
MNR	Ontario Ministry of Natural Resources
MROL	Ministry Recognized Operating Level
NDPEG	Natural Disturbance Pattern Emulation Guide
NESMA	Northeast Seed Management Association
NOEGTS	Northern Ontario Engineering and Geology Terrain Survey
NRVIS	Natural Resource Values Information System
Pj	Jack Pine
Po	Poplar
RPF	Registered Professional Forester
RPFO	Report of Past Forest Operations
RSA	Resource Stewardship Agreement
SGR	Silvicultural Ground Rule
SFL	Sustainable Forest Licence
SFMM	Strategic Forest Management Model
SGR	Silvicultural Ground Rules
STFI	ShiningTree Forest Inc.
TFAI	Timiskaming Forest Alliance Inc.
UGS	Unacceptable Growing Stock

Appendix E Summary of Input to the Audit Process

General Public/Other Stakeholders

Two approaches (in addition to meeting with the LCC and interviewing its members) were used to encourage the public to provide input into the audit: 1) a sample of approximately 350 individuals/organizations on the MNR's FMP mailing list were sent a brief questionnaire asking for input on the management of the forest; and 2) Advertisements were placed in local newspapers soliciting input.

In response to these attempts we received 22 responses on a variety of topics. Many of the responses expressed satisfaction with the efforts of the Company and Ministry. The Audit Team considered all those comments which were inside the scope of the audit. Several of the responses identified more than one concern. In approximate order of the frequency with which they were expressed, following is a list of issues identified in returned questionnaires and accompanying letters:

- Concern about the effects of herbicide application on wildlife
- Concern about the effects of herbicide application on forest development
- Concern about the creation of access to lakes
- General comments against clearcutting
- General comments about detrimental effects of forestry on wildlife habitat
- Concern about effects of forestry on the area's aesthetic qualities
- Concern about insufficient road maintenance
- Concern that a lot of wood is left in slash piles
- Concern that trees are being harvested too early (i.e. when they are too young)
- Concern that insufficient diversity of species are being planted.

Native Communities

See Section 3.2.3 for a discussion of issues raised by, and relative to First Nations.

SFL Holder

Staff from TFAI raised a number of items for discussion and issues for consideration during the audit, including:

- Development efforts associated with the company's watershed thermal regime estimation process and interpolated watershed process
- Concern about the possible incompleteness of information contained in the NRVIS system for the ShiningTree Forest;
- Concern about MNR responsiveness to reported new values;
- Concern about MNR's
- Discussion of slash pile burning efforts
- Discussion of harvest and silvicultural accomplishments
- Discussion of objectives of herbicide application
- Discussion of effectiveness and accomplishments of the GACC

Ministry of Natural Resources

Staff from the Ministry of Natural Resources provided the auditors with much input through interviews, group discussions, and written submissions. Ministry staff raised a number of issues for consideration during the audit, including:

- Concern about excessive ditching on a forest access road;
- Concern about culvert lengths;
- Concern about funding available for conducting values surveys;
- Concern about company rapport with tourist operators;
- Concern about errors in the company's interpolated watershed and thermal regime estimation process
- Access management in the southern portion of the Forest
- Need for elk management in the southern portion of the Forest
- Integration of the ShiningTree and Timiskaming MNR efforts
- Concern about completion of bridge engineering documents

All of these topics were considered in the course of the audit.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